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ABSTRACT

The purpose of this program evaluation was to provide a comprehensive assessment of the effectiveness of the Schools Without Failure (SWF) program. In a study of the SWF program in several schools in a midwestern, metropolitan school district, three sets of variables were measured: student outcomes, classroom characteristics reflecting SWF program elements, and school organization characteristics reflecting SWF program elements. Student variables assessed included achievement, productive thinking, sense of competence as a learner, responsibility, attitudes toward school, and ability to work with others. Classroom variables were involvement in learning, relevance of curriculum, responsibility, thinking, and success orientation. School organization variables consisted of goals, teacher role, principal role, rewards, and faculty group problem solving for program improvement. Several measurement instruments were employed in a two year comparison study of fourth and fifth grade students in SWF and control classrooms. Results indicate that the SWF program had no consistent impact on student cognitive variables but had a positive impact on affective/social variables. SWF classroom characteristics indicate possible positive cognitive and affective outcomes. Several SWF school organizational characteristics were associated with positive impact on student outcomes. In general, there were more findings of a favorable program impact than would be expected in a large, well-designed study. It is concluded that SWF programs are likely to have a favorable impact and unlikely to have a negative impact on student outcomes. (Author/RH)

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"SCHOOLS WITHOUT FAILURE" AFFECT STUDENT OUTCOMES

Franklin W. Neff
Winton M. Ahlstrom

Institute for Community Studies
University of Missouri at Kansas City

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Some projects seem to have lives of their own, resistant to direction and hurrying. Data collection marched much as scheduled. Analysis and reporting have been a different matter, more like trying to push one boat while standing in another. One consequence is that we have become very appreciative of many people who have helped us make progress.

Central office staff of the school district first invited our interest. They continued to give information and those vital letters of cooperation as we sought federal funding. The executive directors of the NIMH review committee (Joseph March and Teresa Levitin) also provided encouragement and understanding as we impatiently waited funding and wrestled with research problems.

We were pleased that the principals and teachers who had participated in Schools Without Failure training were receptive to our requests to collect data. The parallel receptivity of principals and teachers who had not participated and who were to be our "Comparisons" demonstrates an interest in research and educational improvement quite different from what critics contend. They all taught us much about education in the mid-1970's.

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I. ON BALANCE, STUDENTS DO BETTER IN SCHOOLS WITHOUT FAILURE

SUMMARY OF SCHOOLS WITHOUT FAILURE RESEARCH PROJECT

A. Background

1. Problems in Education

In the 1960's there was widespread dissatisfaction with the amount of learning which students achieved, and there were major efforts made to bring about change in education. A program which attracted attention was created by a psychiatrist named William Glasser. Glasser had worked in institutions for delinquent girls and became convinced that those girls had developed: (1) the belief that they were failures and, (2) expectations that they would continue to be so. Glasser was invited to work with teachers and others in the schools. What he observed encouraged his conviction that schools helped fix the "failure" label on many students. He then developed an approach for educators to use in order to have a constructive impact on students. This program is described in his book, Schools Without Failure (1969).

2. Basic Ideas of the Schools Without Failure Program (SWF)

Glasser states that the two basic needs which humans have are: (1) to love and be loved; and (2) to feel worthy. Glasser maintains that people who are unable to satisfy these needs are typically people who are unable to relate effectively to others. Such people do not take responsibility for themselves and cannot deal effectively with reality. When schools label people as failures, they encourage and support irresponsible behavior. People who perceive themselves as failures, and are supported in this self-labeling, cannot be expected to succeed in life. The opposite side is reflected in the argument that if a child can succeed in elementary school, he has a much better chance to succeed in life.

Glasser's recommendations for establishing a success-oriented learning environment can be summarized as follows.

a. Promote Student Growth

(1) Increase Involvement

The organization and content of learning and classroom climate should maximize opportunity for children to learn about themselves and others in social and interpersonal experiences which are non-judgmental, supportive, and which encourage participation.

(2) Increase Relevance

Learning objectives which are relevant only in the educational setting are less useful and meaningful than those which are perceived by students to have use and significance elsewhere in their lives.

(3) Increase Responsibility

The child's responsibility for his own behavior and progress is to be encouraged. This has long been an educational goal. It is also relevant to some of the central findings of the Coleman study (1966) and fits well with mental health objectives.

The learner should be encouraged to specify a goal and commit her/himself to it. Performance is emphasized. No excuses are accepted, although problems and difficulties are. They are to be overcome and resolved by the development of new plans and new commitments. This is a Reality Therapy principle and one which Glasser says is appropriate for working with individuals in the classroom. Problem behaviors should be perceived in a current time frame rather than historically. Using past performance is of value only if it permits understanding in dealing with the present situation and is not used to label a child as a "chronic" problem.

(4) Increase Thinking

Activities developing reflective thinking and critical inquiry behaviors should be emphasized; rote memory activities minimized.

(5) Increase Success Orientation

The schools have tended to emphasize failure, based upon the assumption that motivation is extrinsic and based upon fear of consequences. Failure should not be a part of a child's experience in a learning setting. By emphasizing success, both student and teacher start from the position that learning is expected of all. No one is rejected or forgotten. Such an orientation fits well with mental health philosophy and such educational approaches as continuous progress, individualized instructional goals, and self-pacing.

b. Organize Adults to Support Work with Students

(1) Develop a Faculty Group Which is a Cohesive Problem-Solving Unit

This is a core element in developing an effective educational organization. It can provide teachers with opportunities to discuss openly their problems and to get support and assistance from each other. Such a group can influence the allocation of resources to enable teachers to develop materials, experiment with new approaches, and get reactions of other adults to their ideas and classroom performance. Such a group can generate sufficient understanding and acceptance so that a coherent and effective educational program can be offered.

(2) Have the School Staff Develop Program Foci

The SWF program includes certain basic ideas. For example, no failure, involvement of teachers and students with each other as people, individual responsibility, reality orientation, thinking emphasis. It includes some procedural specifics such as teacher-led student circle groups for discussion and faculty discussions in problem-solving. However, the particular problems which the faculty decides to work on within the school are to be determined by them. This fits with the SWF's concern for commitment and responsibility on the part of the school staff as well as students.

(3) Provide Administrative Support

Administrative support is essential if a significant change is to occur. One way of providing this support is to involve the principal of the school and another teacher selected by the school in leading the training effort in a school. Administrative encouragement and support is a vital factor in effecting the kinds of adjustments in schedules, materials, equipment, and other changes needed to support the development of a new program in the school setting.

(4) Involve Parents

Parents should be involved in the educational process along with teachers and students. This can be done through a form of a parent-student-teacher conference around student growth and development. The involvement of parents in the training program for principals and teachers should be encouraged.

3. Need for Research

The SWF program has been implemented in many schools in many parts of the United States. However, relatively little systematic research has been done on it. In those cases in which research has been done, the results have been mixed. In many cases, the research considered only the effects but did not examine what elements of the SWF program produced those effects.

A major school district in a midwestern metropolitan area decided to implement the SWF program in a number of schools. District staff were interested in evaluation of the program. The research staff of the Institute for Community Studies developed a proposal to study student outcomes and to determine whether those elements of the program which Glasser stated were important were, in fact, in operation. The research was later funded by the National Institute of Mental Health.

B. Objectives of the Research

The goals of the study were to learn (1) what the impact of the Schools Without Failure (SWF) program was on student cognitive, affective, and social outcomes; and (2) the impact of various elements of the program on those outcomes.

There were three basic questions formulated which the study was designed to answer:

Question 1: Do students in classes participating in the SWF program have more favorable outcomes in Affective, Social and Cognitive areas than students in classes not participating in the program?

Question 2: Are student outcomes more favorable in classes which are "high" on SWF classroom characteristics than student outcomes in classes "low" on those characteristics, regardless of whether the class is participating in the program?

Question 3: Are student outcomes more favorable in schools which are "high" on SWF school organization characteristics than student outcomes in schools "low" on those characteristics, regardless of whether the school staff is participating in the program?

In Questions 2 and 3, the principal characteristics were identified and defined as variables for study. These are shown in the Design section which follows.

C. Procedures

1. Design

The initial intent was to have a pre-post, comparison groups study, involving students in two adjacent intermediate grade levels, which was replicated two years in a row. There are many student outcomes intended by educators. The SWF program emphasizes the need for some basic cognitive skills (such as reading and computation); for ability to think; for such affective outcomes as sense of competence in school, sense of responsibility for one's own actions in school, and liking school; and for skill in relating to others in order to get one's needs met. To assess these, seven cognitive, three affective, and two social measures were used. (See the section on Measures below.)

Because the age, sex, IQ, and socioeconomic status of students has often been shown to be related to student outcomes, the design called for selecting classes and schools in different areas which reflected varying income levels. The initial design called for covarying (adjusting scores) for sex and IQ.

Initial analyses on first year data demonstrated that sex did not have a consistent impact across grades or income on outcome scores.

IQ was found to be very similar in magnitude across grades and for both SWF and Comparison school students within a given school income level. It was different across income levels. Therefore, it was decided to ignore sex and to consider IQ as confounded with income. The final design called for three factors: grade, income, and program characteristic, with no covariates.

As pointed out above, there were several student outcomes in each of three areas: cognitive, affective and social. It was decided to use a technique which could process a number of outcomes in one analysis. Since there were three factors, it was decided to use multivariate analysis of variance as the analytic approach. The analyses were run twice, once using individual student outcome data as the unit of analysis, once using class means as the unit of analysis.

For several reasons, modifications were made in the design. For the first year, the study was funded so late that it was necessary to make it a post only design, with SWF and Comparison classes and schools located in three different income level areas. Students from Grades 4 and 5 were included.

The second yar, it was possible to obtain pre data as well as post. Data were collected from students in Grades 5 and 6 in both SWF and Comparison schools. Schools were again selected to represent three income levels.

To provide the reader with a better sense of the analyses, two points should be made. The first concerns each analysis for a given program characteristic; the second concerns the variety of program characteristics for which analyses were conducted.

Since there were 12 student outcomes (dependent variables) the first year, and 11 the second year, the decision was made to split the student outcomes into two groups, cognitive and affective/social. This meant that, for any program characteristic, the student cognitive outcome scores were entered into the three-factor design, and the analysis run. Then the same was done for the affective/social outcomes. The structure of such an analysis may be clearer through looking at the means table for student cognitive outcomes, with the data organized to answer Question 1 with data from Year 1. This is shown below in Table I-1.

Table I-1

Student Cognitive Outcome Mean Scores by Grade, Income, and Program[a]

Year 1

Cognitive Outcomes	Income	Means			
		Grade 4		Grade 5	
		SWF	Comp	SWF	Comp
Reading (ITBS)	High	4.45[b]	4.12	5.77	5.06
	Medium	3.83	3.49	3.79	* 3.87
	Low	3.02	3.34	3.65	3.95
References (ITBS)	High	4.31	4.11	6.04	5.06
	Medium	3.78	3.54	4.59	4.03
	Low	2.55	3.64	3.75	4.18
Math Problem Sovling (ITBS)	High	4.38	* 4.32	5.79	5.19
	Medium	3.67	* 3.77	4.60	3.86
	Low	2.41	3.67	3.60	4.21
Fluency (TTCT)	High	19.87	23.35	28.69	27.17
	Medium	26.34	18.96	22.00	23.97
	Low	15.09	12.61	21.72	21.29
Flexibility (TTCT)	High	10.89	11.66	14.24	12.38
	Medium	11.74	9.53	10.69	11.36
	Low	8.48	6.98	9.89	* 9.98
Originality (TTCT)	High	19.60	26.44	28.00	29.67
	Medium	31.35	19.88	25.72	28.24
	Low	19.00	15.63	28.64	24.60
Unlikely Things	High	31.55	30.52	32.83	* 32.83
	Medium	29.95	26.49	27.79	29.05
	Low	25.48	27.66	27.95	27.69

[a] Income is the proportion of students in a school who are eligible for subsidized lunches.

[b] Underlined score is apparently higher than the score in the other program.

*Scores for SWF and Comp are, or almost are, identical.

This table shows the mean scores for the students on seven cognitive outcomes, the table cells reflecting the three-factor design. The mean score in the upper left hand cell, for example, is the average Reading score for those students who were in Grade 4 classrooms in High Income schools in which the faculty--including the student's teacher--participated in the SWF training program. The next cell to the right is the average for students in Grade 4 classrooms in High Income schools in which the faculty did not participate in training. It is as though the analysis tests the difference between those cells and all other pairs in the table, while also considering differences between income levels and grade levels.

The second point to be made is also important if one is to understand the extensiveness of the analyses conducted. Table I-2 below portrays the variety of analyses originally intended. Each row (in which there are X's in the outcome columns) refers to an SWF program characteristic. Each X refers to an analysis of the impact of that characteristic on student outcomes.

Table I-2

Initial Plan for Determining the Impact of SWF Program Characteristics on Student Outcomes

Question	Program Characteristic Being Studied	Assessment of Impact on Cognitive Outcomes	Assessment of Impact on Affective/Social Outcomes
1	Faculty Participating in SWF Training	X	X
2	SWF Classroom Characteristics*		
	Involvement	X	X
	Relevance	X	X
	Responsibility	X	X
	Thinking	X	X
	Success Orientation	X	X
	Above combined	X	X
3	Organizational Characteristics		
	SWF Goals	X	X
	SWF Teacher Role Behavior	X	X
	Rewards for SWF Teacher Role Behavior	X	X
	Principal Role Behavior: Score #1	X	X
	Score #2	X	X
	Staff Problem Solving	X	X

*Most of these variables were measured by the SSCD and the RCS. For more explanation, see Section C.3. below in this Summary. The full explanation regarding classroom characteristics in in the complete report, Section IV.A.3.

As will be explained in the results section, not all of these tests were possible or necessary. Nonetheless, eleven program characteristics were tested the first year, and ten the second. Thus, many sets of outcomes were examined.

The analyses were done twice. First, the data utilized were the individual student scores. This approach recognizes the large number of students involved in the study. In the second analysis, the class average score for each outcome variable was used. This approach recognizes that the students were in class groups. In general, the main differences between the two was that there were many more significant findings with individual level analyses. Mean scores for the two analyses were essentially the same. Findings from the two sets of analyses were almost never divergent. Therefore, to give the reader as much information as possible about the trends in the data, the significant findings from the individual level analyses will be discussed.

2. Sample

In Year 1, classes were selected in SWF schools and in schools with similar student performance and family income characteristics. The distribution is shown in Table I-3 shown below. Data were used from only those students who had at least 60 days in the classroom prior to data collection.

Table I-3

Distribution of Schools, Classes, and Students by Grade, Income, and Program
Year 1

	Income	Grade 4		Grade 5	
		SWF	Comp	SWF	Comp
Schools*	High	3	3	2	3
	Medium	1	2	2	2
	Low	1	2	2	2
Classes	High	5	4	2	4
	Medium	3	3	4	3
	Low	1	3	3	3
Students	High	114	78	42	108
	Medium	84	71	114	71
	Low	25	64	82	57

*Same school may be represented at two grade levels, but not in both SWF and Comparison.

The limited number of classes and students in some of the categories of the design suggests that results involving those cells should be viewed with some caution. It is important to note that, for Questions 2 and 3, the assignment of schools and classes to high or low SWF categories varied from variable to variable. (Information on this is provided in the full report.) Of course, the outcome data appeared only in a given grade and income set. It varied in whether it was high SWF, low SWF or omitted (because the program data did not support categorization of the class as high or low). Finn's Multivariance program was designed to accommodate differences in N's in the various cells. Nonetheless, cells with small N's, especially at the class level, encourage caution in interpretation.

For the second year, classes were selected in a similar manner, except that more SWF than Comparison classes were selected. In addition, a few classes were included which did not meet the training program criteria, but which were identified as exhibiting many elements of the program in the classroom. The distribution of Year 2 students, classes, and schools is shown below in Table I-4. Some students were included both years.

Table I-4

Distribution of Schools, Classes, and Students by Grade, Income, and Program
Year 2

	Income	Grade 5		Grade 6	
		SWF	Comp	SWF	Comp
Schools	High	2	2	2	1
	Medium	2	2	4	2
	Low	2	1	3	1
Classes	High	3	2	2	2
	Medium	5	2	6	3
	Low	5	1	4	2
Students	High	73	42	46	50
	Medium	144	45	137	71
	Low	103	25	72	38

In order to insure that students (whose data entered the analysis) had been involved in the educational experiences of their classroom long enough for it to have an impact, the analyses were done with only those students who had both pretest and posttest data. Data were collected in October and in late March and early April.

Students who had complete data on both pretest and posttest were included in the final analyses with this exception. If a student did not have adequate data for a score on either Giving Help or Getting Help, the class average was substituted. If data were missing on both, the student was dropped.

3. Measures

Three sets of variables were measured: student outcomes, classroom characteristics reflecting SWF program elements, and school organization characteristics reflecting SWF program elements. Table I-5 below specified what was to be measured, from whom data were obtained, and the instrument used in data collection. (For a more complete description of measurement, see sections III.A.3., IV.A.3., and V.A.3. of the complete report.)

Table I-5

Measurement of Project Variables

Variables	Data Source	Collection Instrument or Procedure
Student Outcomes		
Achievement	Student	Iowa Tests of Basic Skills
Productive Thinking	Student	Torrance Tests of Creative Thinking; Guilford's Unlikely Things
Sense of Competence as a Learner	Student	Modified Waetjen-Liddle
Responsibility	Student	Intellectual Achievement Responsibility
Attitudes Toward School	Student	Pupil Opinion Questionnaire
Working With Others	Students	Working Together in School
Classroom		
Involvement; Relevance; Responsibility; Thinking; Success Orientation	Observer	Reciprocal Category System; Success Schools Classroom Description
School Origanization		
Goals; Teacher Role; Principal Role; Rewards; Problem Solving	School Staff	Questionnaire

During the first year, data were obtained on Reading, using the Iowa Tests of Basic Skills. Since Reading scores correlate so highly with References and Math Problem Solving, the Reading test was not used in the second year.

Data were collected on all classroom characteristics with the procedure called the Success Schools Classroom Description (SSCD) and on all classroom characteristics but Relevance with the Reciprocal Category System (RCS).

Organizational characteristics were measured with a pencil and paper questionnaire administered to the instructional staff of each school.

Other data collected included IQ (first year only), attendance (to eliminate highly transient students), and time students spent with other teachers than the home room teacher (second year only).

The data which were used as an estimate of the income level (of the community from which students came to a given school) was the percent of students eligible for subsidized lunches. The split was made as follows: High Income, the proportion ranged up to 39%; Medium Income included schools between 40% and 79%; Low Income included schools from 80 to 100%.

4. Data Collection

During the first year, data were collected in the spring only. Student outcome data, except for achievement data routinely collected by the teacher, were collected by research staff. All classroom and organizational data were collected by research staff.

During the second year, student outcome data were collected in the fall and in the spring. Otherwise, data collections the second year were done in the same manner as the first year.

5. Data Analysis

In the first year, student outcome scores from the spring data collection provided the criterion or dependent variable data. Classes were allocated to the cells in the three-factor design according to grade, school income (percent of students eligible for subsidized lunches), and whether their class and/or school was high or low on the program variable being analyzed.

During the second year, student outcome data were collected in the fall and again in the spring. A variety of points of view regarding the measurement of change were examined. It was decided that residual scores best met the needs of this project. (The residual scores were the difference between actual posttest scores and the score predicted by regression procedures.) The residual scores were then analyzed in the same manner as the outcome scores were analyzed in the first year.

The analyses were run separately, once for the cognitive outcomes and once for the affective/social outcomes. The analyses were done using Finn's (1976) *Multivariance* computer program. This program tested whether there were significant differences among groups, considering all outcome variables (in cognitive or in affective/social sets) in the multivariate analysis of variance (MANOVA). The program then computed an analysis of variance (ANOVA) for each individual outcome. ANOVA results are presented in this report only when the MANOVA was significant. In the individual level analyses, which formed the basis of discussion, students were *not* aggregated by class, nor were classes aggregated by school.

D. Results

1. Introduction

While the design of the study does not seem especially complicated, when one approaches the computer output, it is difficult to understand all that is reported and to link it back to the questions being asked by the study.

First, the student outcomes (dependent variables) are not all affected the same way. Occasionally, students in one group may be high on one outcome, but low on another. More often, there is a difference between certain groups on one outcome, but not on another.

Second, cognitive outcomes may be affected differently from affective/social outcomes. The program characteristic may have an effect on some cognitive outcomes, but not on others or on affective/social. A group may be high on one measure but not on another.

Third, the three-factor design helps us give consideration to important matters, but it increases the complexity of the results and of interpretation. An outcome which occurs occasionally is that the factors interact so that the program characteristic seems to have opposite effects for students in two different income levels and/or two different grade levels. An example occurred on Principal Role Score #1 in the first year. Students in High Income schools in Grade 4 had higher scores on Unlikely Things if they were in schools in which the principal was rated high; but in Grade 6, students in High Income schools had higher scores if they were in schools in which the principal was rated low. The opposite was true for students in Medium Income schools.

Fourth, there are two years of data. The structure of the analysis was somewhat different for each year, yet there is a need for comparison or at least attention to both years. The results on some program characteristics were quite different in the two years.

As a consequence, it became necessary to develop a way to pull out of the mass of information a method of summarizing the main meaning of the data for a given program characteristic. To do so, we started with the multivariate analysis of variance (MANOVA) for cognitive outcomes. If none of them were significant, it was concluded that the program characteristic had no impact (either positive or negative), and attention was turned to the affective/social analyses. If there were significant findings in the MANOVA on cognitive outcomes, they were examined, looking at the interactions first. For example, did being in an SWF school and class have a different impact on students in Grade 4 than those in Grade 5? For students in High Income schools than for students in Medium or Low Income? When all the interactions were examined, attention turned to the effects of the three factors, especially the program characteristic. Did it make a difference by itself?

When any MANOVA analysis was significant, attention was given to the analysis of variance for each student outcome to determine which outcomes were affected by the program characteristic. Finally, attention was given to the means table to determine the direction of the impact--was it positive or negative?

But looking at those data often did not provide a simple, congruent view of the impact of the program characteristic, as indicated in the problems listed above. It became a matter of seeking the "weight" of the evidence. This was done, taking into consideration significance of the MANOVA, significance for individual outcomes, and the pattern of differences between the means. The information in this summary is the result of those processes. (Readers who wish to make their own judgments are invited to read the full report which follows this summary.)

The results will be presented by program characteristic in the sequence of the questions. The initial questions have been rephrased somewhat to better define the program characteristics being examined.

2. Question 1

Does school faculty participation in the SWF training program make a difference in student outcomes?

Chart 1 below summarizes the data for this question. It shows that faculty participation did not significantly affect cognitive outcomes, but did favorably affect affective/social outcomes. The effect is clearer for data from Year 1 than for data from Year 2.

The univariate analyses of faculty participation on student affective/social outcomes, for Year 1, showed a significant impact on student attitudes toward school, for sense of responsibility for own performance in school, and for getting help in school. In Year 2, the impact was significant for sense of responsibility.

Chart 1

	Impact on Student Outcomes of Faculty Participation in SWF Training Programs	
	Cognitive Outcomes	Affective/Social Outcomes
Year 1	0	+
Year 2	0	+

0 means no consistent impact; + means a positive impact;
- means a negative impact; ? means the impact was borderline.

To indicate the source of the + for affective/social outcomes in Year 1 (in Chart 1), the following material is provided.

The multivariate analysis of variance produced an F-ratio of 6.10, which was significant at better than the .001 level with degrees of freedom of 5 and 689. The univariate analysis of variance for the individual outcomes gave the results shown in Table I-6.

Table I-6

Analysis of Variance of Student Affective/Social Outcomes for Main Effects of Faculty Participation in Training

Student Outcome	F-ratio[a]	p Value
Sense of Competence as a Learner	2.62	.106
Attitudes Toward School	16.34	.001
Sense of Responsibility in School	9.09	.003
Giving Help	3.15	.076
Getting Help	11.93	.001

[a] Degrees of freedom are 1,693.

3. Question 2

Does the presence or absence of SWF classroom characteristics make a difference in student outcomes?

This question includes the determination of the impact of the following SWF program characteristics, which were measured through observation of classrooms: Involvement, Success Orientation, and all classroom characteristics combined (Involvement, Relevance, Responsibility, Thinking, and Success Orientation). It was not possible to conduct analyses independently on Relevance, Responsibility, and Thinking because the data on those variables was quite limited and did not adequately differentiate classrooms into high and low SWF categories to permit analysis.

a. Involvement

Chart #2 below summarizes the analyses. There was a consistent positive effect of Involvement in Year 1. The data from Year 2, available only for the Success Schools Classroom Description (SSCD) instrument, show a borderline significant effect on cognitive outcomes.

Chart 2

		Impact on Student Outcomes of SWF Involvement in the Classroom	
		Cognitive Outcomes	Affective/Social Outcomes
Year 1:	SSCD	+	+
	RCS	+	+
Year 2:	SSCD	+?	0

0 means no consistent impact; + means a positive impact;
- means a negative impact; ? means the impact was borderline.

The effect of Involvement in Year 1 was significant for all cognitive outcomes when measured with either the SSCD or the Reciprocal Category System (RCS). The effect was significant for attitudes and on getting and giving help when Involvement was measured by the SSCD. When measured by the RCS, Involvement significantly affected students' sense of competence as learners, their attitudes toward school, and their getting help in school. In Year 2, Involvement, as measured by the SSCD, significantly affected math problem solving and use of references.

b. Success Orientation

Data reflecting this SWF classroom characteristic were not easily observed. Only the data from the Success Schools Classroom Description instrument for Year 2 permitted analysis. Chart #3 presents the summary.

Chart 3

	Impact on Student Outcomes of SWF Success Orientation in the Classroom	
	Cognitive Outcomes	Affective/Social Outcomes
Year 2	+	0

0 means no consistent impact; + means a positive impact;
- means a negative impact; ? means the impact was borderline.

The impact of being in classes high in Success Orientation seemed to be significant for math problem solving and for productive thinking.

c. SWF Classroom Characteristics Combined

It was not possible to perform separate analyses for Relevance, Responsibility, or Thinking, as discussed above. It was possible, however, to look at the data available for a given classroom on all variables from all observers on a given instrument (RCS or SSCD). By looking across variables, it was possible to categorize many classrooms as high or low generally. The analyses could then be conducted with those classrooms. Such analyses were done with the data from each instrument.

Chart #4 below presents the summary. Over half of the analyses indicate a positive effect of SWF classroom characteristics on student cognitive and on affective/social outcomes.

The effects of SWF classroom characteristics combined were significant for SSCD data for all cognitive outcomes. In Year 2, the effects on cognitive outcomes from SSCD data were on references and math problem solving. From RCS data, the effects were significant for math problem solving and almost for references.

Chart 4

		Impact on Student Outcomes of SWF Classroom Characteristics Combined	
		Cognitive Outcomes	Affective/Social Outcomes
Year 1:	SSCD	+	+
	RCS	0	+?
Year 2:	SSCD	+	0
	RCS	+?	0

0 means no consistent impact; + means a positive impact;
- means a negative impact; ? means the impact is borderline.

The significant effects on affective/social outcomes appeared only in Year 1. When measured by the SSCD, classroom characteristics significantly affected student attitudes toward school and their getting help in school. Data from the RCS on classroom characteristics showed significant effects on student attitudes toward school and their sense of responsibility for their own performance.

Of the three questions asked about the impact of the SWF program in this research, this one concerning classroom characteristics would be judged by many educational experts to be the key question. The variables in classroom characteristics would be expected to have the most direct impact on student outcomes.

As the results above demonstrated, about nine of the 16 tests showed that the SWF program had a favorable impact. Of particular interest is the fact that Involvement (comprised of such things as caring and concern among teachers and students) was most often significant. Glasser wrote that Involvement was the key, that it came first. Perhaps fuller implementation of the program would have resulted in more data being obtained on other classroom variables and stronger evidence of SWF program impact appearing.

4. Question 3

Does the presence or absence of SWF school organizational characteristics make a difference in student outcomes?

The following organizational characteristics were assessed: emphasis on SWF Goals; teachers engaging in SWF Teacher Role Behavior; Rewards for that behavior; principal engaging in effective leader behavior; effective staff Problem Solving. These will be reported in sequence. Data were obtained from approximately 260 staff members each year.

a. Emphasis on SWF Goals

Chart #5 summarizes the results of analysis of the impact of SWF Goals. It indicates a generally positive impact on student outcomes.

Chart 5

	Impact on Student Outcomes of High Emphasis on SWF Goals	
	Cognitive Outcomes	Affective/Social Outcomes
Year 1	+?	+?
Year 2	+?	+?

0 means no consistent impact; + means a positive impact;
- means a negative impact; ? means the impact is borderline.

In Year 1, the impact of SWF Goals on cognitive outcomes affected references and productive thinking. SWF Goal emphasis affected student sense of competence as learners and their attitudes toward school.

In Year 2, the impact affected math problem solving and productive thinking. It made a significant impact on student sense of responsibility.

b. Teachers Engaging in SWF Teacher Role Behavior

Chart #6 below summarizes the results of the impact of SWF teacher behavior. It appears that students in schools in which teachers are described as doing things prescribed by the SWF program have better cognitive outcomes. There does not seem to be an impact on affective/social outcomes.

Chart 6

	Impact on Student Outcomes of SWF Teacher Role Behavior	
	Cognitive Outcomes	Affective/Social Outcomes
Year 1	+	0
Year 2	+	0

0 means no consistent impact; + means a positive impact;
- means a negative impact; ? means the impact is borderline.

The cognitive outcomes significantly affected in Year 1 were references and productive thinking. In Year 2, Teacher Role Behavior significantly affected math problem solving and productive thinking.

c. Rewards for SWF Teacher Role Behavior

The results of the analyses on Rewards showed that the extent to which teachers are praised or otherwise rewarded for SWF behavior did not have a significant impact on either cognitive or affective/social outcomes in Year 1, and only cognitive outcomes in Year 2. See Chart #7 below.

Chart 7

	Impact on Student Outcomes of Rewards for SWF Teacher Role Behavior	
	Cognitive Outcomes	Affective/Social Outcomes
Year 1	0	0
Year 2	+	0

0 means no consistent impact; + means a positive impact;
- means a negative impact; ? means the impact is borderline.

Rewards for SWF Teacher Role Behavior in Year 2 affected student outcomes in references and productive thinking.

d. Principal Role Behavior

Of the six tests of the impact of principal behavior, as measured by two factors in principal behavior (Collaborative, Facilitative, Performance-oriented Leader; and Accepting Easy To Work With) only one was demonstrating a clear effect. With Principal Role Behavior Score #2, in the second year, students in schools in which the principal was rated high on Accepting, Easy To Work With had better outcomes. Chart #8 provides the data.

Chart 8

	Impact on Student Outcomes of Principal Role Behavior	
	Cognitive Outcomes	Affective/Social Outcomes
Principal Score #1		
Year 1	0	0
Principal Score #2		
Year 1	0	0
Year 2	+	0

0 means no consistent impact; + means a positive impact;
- means a negative impact; ? means the impact is borderline

References outcomes were significantly affected by principal behavior.

e. Staff Problem Solving

Chart 9 provides the results of the analyses of the impact of staff problem solving processes on student outcomes. It indicates that, in schools in which staff problem solving processes were more effective, there was a positive impact in the second year on cognitive outcomes.

Productive thinking was significantly affected by staff Problem Solving.

Chart 9

	Impact on Student Outcomes of Staff Problem Solving	
	Cognitive Outcomes	Affective/Social Outcomes
Year 1	0	0
Year 2	+	0

0 means no consistent impact; + means a positive impact; - means a negative impact; ? means the impact is borderline.

5. Inspectional Analyses

Examination of the means tables in the full report, without statistical evaluation, suggest additional information. The analyses already reported built grade and income into the analyses to permit separation of their effects from program effects. One wonders if there were differential effects for students at different income levels or in different grades.

Comparisons by inspection (eye-balling) indicate that students in all grade and income levels were more likely in high SWF settings to benefit on cognitive outcomes than on affective/social outcomes. This is especially true for students in low income schools.

Grade differences are not consistent enough to indicate differential effects of the program. The cognitive measures may have been more sensitive to change.

6. Summary of Analyses

It is easy to think that these data do not present a strong case for the impact of the program. However, some additional considerations require a revision in such thinking.

What is the likelihood that a new educational program will have any measurable impact on student outcomes? Especially when it requires significant changes in the relationships among teachers and students?

Especially when the effort invested in its implementation is limited? Especially when the study of its impact is a relatively large, relatively well-designed one? Mansfield and Busse, in the October, 1977, issue of Educational Researcher, state that such studies are less likely to yield significant effects than smaller, poorly designed ones.

One can think, then, what are the probabilities that there will be significant findings showing a favorable impact of the project? Given that most projects do not have favorable effects, we suggested estimating that 75% of the findings on such projects would show no significant effect. Seldom do educational projects have a negative effect--say 5%. That leaves about 20% that should be significant and positive.

We put the results reported above into such a contingency table. Then we entered the actual data and produced the table below.

Table I-7

Predicted and Observed Frequencies of Favorable, Neutral, and Negative Program Effects

Effect	Expected	Observed	Difference
+	8.4	22	13.6
0	31.5	20	11.5
-	2.1	0	2.1

A x^2 analysis shows a very significant result. There are more findings of a favorable impact than would be predicted on the basis of the thinking described above. Most SWF program characteristics are likely to have a generally favorable impact and none are likely to have a generally negative impact.

Therefore, it is appropriate to say that, on balance, the SWF program was good for students.

II. Introduction

A. Background

1. Need for New Educational Approaches

Public dissatisfaction with the outcomes and operation of public schools needs no documentation. The criticisms come from people in all walks of life. Some give more emphasis to their dissatisfactions with cognitive outcomes; others give more emphasis to problems with affective or social outcomes.

Part of this dissatisfaction is fueled by the disappointments with the effects of extensive federal intervention during the 1960's and early 1970's. Large scale evaluations have shown that many of the major programs have not produced what people hoped for. The interested reader is directed to such documents as the evaluations of the More Effective Schools Program in New York City (Fox, 1968); to various evaluations of compensatory education (Menges, 1972; Glass, 1970; Wargo, 1972); or more recent analyses of the Follow Through Program (U.S. GAO, 1975; Stallings, 1975). As a consequence, many parents and educators have sought programs which are designed to attend to all three areas of student outcomes and which do not require drastic changes in school buildings, equipment, or facilities. The Schools Without Failure Program, developed by psychiatrist William Glasser, appears to meet those criteria. That program, and research relevant to a number of its concepts, will be presented in the next section.

2. Potential of the Schools Without Failure Program

William Glasser was trained as a psychiatrist and has practiced as a psychiatrist for many years. Fairly early in his career, he worked in an institution for delinquent girls. As a result of his work there, he concluded that a significant problem in American society is the development of a sense of being a failure and some resignation to staying in that condition. Glasser concluded that, while schools may not be responsible for students' having difficulty in school, it was often the place where the failure label or designation became attached to people. As a consequence, Glasser became interested in the activities and processes of public schools and the possibility of implementing some of his ideas about helping people in the schools. Out of this work he developed his book, Schools Without Failure (1969).

Glasser established an organization, the Educator Training Center in Los Angeles, to help teachers and principals to understand his ideas and develop ways of implementing them in their schools. The Educator Training Center (ETC), with Glasser continuing his involvement, developed training procedures, materials, video tapes, and cassettes to explain his concepts and assist in their implementation in the classroom.

On the basis of those materials, and rather extended conversations with some of the key people in ETC, five relatively broad conceptual dimensions of the Schools Without Failure (SWF) program have been defined. They provide the basis for the study of the immediate learning environment of students in this project. (Another set of dimensions having to do with salient organizational characteristics will be discussed below.) In the next several paragraphs, these dimensions will be discussed in terms of their meaning in the SWF conceptualization. In addition, relevant research of others will be included.

a. Nature of the Immediate Learning Environment — The Classroom

(1) Involvement

A fundamental concept in Glasser's approach to changing people is the involvement which the therapist or the teacher has with the other person. In both Reality Therapy (1965) and in Schools Without Failure (1969), Glasser states that the first step must be the establishment of a kind of friendship relationship. It is one in which the teacher is interested in and concerned about the student. It is one in which the status differential of their roles is played down and their interest in each other as people is emphasized. The development of this kind of relationship is necessary for the teacher to have influence with the student such that the student will act on suggestions made by the teacher or follow the teacher's lead in engaging in learning activities.

Johnson and Johnson (1974), in discussing competitive versus cooperative goal structures in classrooms, review a considerable body of literature regarding the impact of those two arrangements. They point to the Plowden report (1967), and books by Featherstone (1967) and by Silberman (1970) as major works focussing attention upon developing better learning environments through improving the relationship among students and between teachers and students.

In an earlier review of research, Glidewell et al. (1966) conclude that the widespread acceptance of pupils in the classroom by the teacher has good effects on the way students work with each other, work autonomously, think independently, and exhibit responsibility.

Postman and Weingartner (1969), in discussing the "inquiry teacher," say that the teacher should encourage student-student interaction.

Oeser, in examining compatible and incompatible behaviors in the classroom (1955), says that two of the most powerful and persistent human needs are the need for social acceptance and for communication. He further states that if a teacher is disliked, or if s/he dislikes a pupil, there are barriers to both acceptance and communication. He says that in social action, such as learning and teaching, a person must feel her/himself to be an accepted member of a group.

Many years ago (circa 1932) a sociologist named Waller wrote a book called The Sociology of Teaching (1961). In his book, Waller argues that the dominance-subordination relationship between teacher and student shuts off real communication between them. He then says (op. cit., p. 446):

> There is need for a natural social order in the schools . . . which students and teachers work out for themselves in the developing situation, an order which is intrinsic in the personalities of those involved, a social order resulting from the spontaneous, inevitable, and whole-hearted interaction of personalities. It is the function of the schools to help the individual organize his life out of the social materials which are presented to him. . .

(2) Relevance

Glasser takes the position that too much of the time in school students do not see the relationship between what is happening there and their lives outside. He urges teachers to work at providing experiences which are related to the lives of students. The importance of this is manifest in the repeated discussions of it in texts, articles, and classroom presentations concerned with training and developing teachers. The difficulty of achieving it is reflected in the same way.

(3) Responsibility

Glasser makes a very strong argument about the role of responsibility for people being successful in their lives. In Glasser's conceptualization, the person who is having difficulty in living is one who is not behaving responsibly. As a consequence, Glasser's therapeutic objective is to get people who do take responsibility in getting their needs for love and a sense of worthiness met.

Glasser states that teachers have a major opportunity to foster this characteristic in the students. He sees this happening as teachers help students to make their own evaluations about their behavior, set their own goals, plan their own learning strategies, and evaluate their own progress.

In his book on Collaborative Learning (1972) Mason claims that rules followed in schools may prevent students from learning to become responsible adults. He links this to the development of the students' identity and proposes that self-identity grows out of the experience of directing one's own activities.

In this chapter on the inquiry method, Postman and Weingartner (1969, pp. 25-38) describe some of the characteristics of good learners. They say that good learners prefer to rely on their own judgment.

Combs (1966) argued that the goals of modern education could not be achieved without self-direction. The student needs to select what s/he needs to fulfill her/his potentialities, and this calls for the student to accept major responsibility for his/her own learning. He states further that students need to be given many opportunities to exercise self-direction while they are in school. He expressed the belief that it would be important to accept students into partnership in the educative endeavor.

Lembo (1972) states that people learn from the search to find out why. He says that too many teachers make it impossible for students to assume more and more responsibility for their own education. Lembo says that students are denied the opportunity to talk about their own lives, to plan their learning, to make educational decisions, and to make significant contributions to the school. He further states that if educational goals include the development of individuals who are self-directed, self-disciplined, self-responsible, and capable of making intelligent choices, then the learning process must not be such that control and responsibility are taken away.

(4) Thinking

Thinking, not memorization, should be the major activity in schools, according to Glasser. Glasser encourages teachers to support students in open-ended discussions which were expected to help students increase their capacities for asking appropriate questions, examining evidence, and generating different ideas and approaches. Postman and Weingartner (1969) argue for use of the inquiry method. They say (p. 27) that ". . . it generates a different, bolder, and more potent kind of intelligence. . . ." and (p. 29) that it asks "How do you discover who discovered America?"

While it is a reasonable assumption that most people would agree with the argument that school should help students to learn how to think, the means for attaining this end do not enjoy the same agreement from experts and lay people.

Consideration of these differences helps call attention to the overlap among the five dimensions being discussed here. Some people who espouse the goal of thinking would not necessarily accept the importance of involvement or responsibility. Some might argue that relevance is present whether the student sees it or not. The SWF position would be that students must engage in the process in order to develop skill at it, that the student needs opportunities to identify and to develop those skills, and that they are best promoted in an environment that is not laden with judgment and pressure.

(5) Success Orientation

As stated in the introduction, the name of the program arose from Glasser's conclusion that those processes in schools which define and fault failure have very negative consequences for the individual and the society. As a consequence, Glasser proposes to eliminate the concept from schools and to consider performance in terms of success or progress. As students set goals and work toward them and evaluate their progress, the teacher is to assist the student to successfully engage in those activities.

Brophy and Good (1974) summarize a considerable body of literature regarding the effects of teacher expectancies on students. They conclude that such expectations can function as self-fulfilling prophecies.

Hamachek (1972) writes that consistent success experiences lead to reasonable levels of aspiration and realistic goal-setting, while consistent failure experiences lead to unpredictable levels of aspiration and unrealistic goal-setting. He also presents considerable evidence suggesting that most of the students who drop out of school before high school graduation do so because they feel like failures. He says that teachers can influence how a child feels about himself or herself after a failure experience.

In a study of the relationship between educational expectations and delinquency, Caplan (1974) found that the pessimism which delinquents had about their educational futures preceded their lawbreaking and did not follow it. He also found that academic standing (whether the youth was behind, ahead of, or at normal grade level for his age) was not related to delinquency, while the expectation of school failure was.

To summarize regarding the concepts on the nature of the SWF classroom, the literature which explains the SWF program appears to urge: (1) the development of a concerned, caring relationship among people, especially between the teacher and the students; (2) insuring that work done be, and be understood to be, relevant to the lives of the students outside school; (3) that activities be designed to permit and promote student responsibility for learning; (4) more emphasis on thinking and problem solving rather than memorization; and (5) attention to and emphasis upon accomplishment and success in performance rather than on failure. The interest in these dimensions is certainly not exclusive to the SWF program, as other literature referred to makes clear. That literature also supports an expectation that the development of classrooms with those characteristics are likely to have the outcomes for students sought by the SWF program.

b. Nature of the Classroom's Environment—The School Organization

The literature on effectiveness in education often includes assertions that the main determinant is the quality of the teacher in the classroom. The inclusion of organizational variables in this research reflects a belief that the quality of the organizational context within which the teacher works has a great deal to do with the activities of the teacher and, therefore, the outcomes for students.

The importance thus attributed to the organization is, of course, not original to the directors of this project. The effects of the structure and processes of an organization on its intended and unintended products have been of great interest to sociologists, social psychologists, as well as all humans who live and work in a variety of organizations. A very large volume of that literature concerns organizations other than educational ones. This document will attend to organizational variables in schools. (For those interested in organizational research in varied settings, articles in the Administrative Science Quarterly, and the publications referred to in them, provide a good starting point.)

One of the early scholars writing on the impact of the organization on the students was a sociologist, Willard Waller, referred to above (1961). Stating that the implementation of an idea requires organization, he noted that institutionalization and formalism often develop to subvert goal attainment. He examines the role definitions of teacher and student and discusses negative consequences of the dominance-submission relationship.

Another author, Buford Rhea, was concerned with the impact of the formal organizational structure on learning experiences of students. He was particularly interested in the impact of bureaucratic characteristics on those experiences (1968a, 1968b).

Among the many documents regarding the importance of organizational leadership is that of Chesler, Schmuck, and Lippitt (1963). Those authors discuss the role of the principal in facilitating innovation. Relevant to the same topic, the book by Gross, Giacquinto, and Bernstein (1971) examines the impact of leader behavior, particularly in providing clarity of role definitions and material support in a change effort.

Among the strong critics of traditional educational organizations, George Dennison (1969) argues for the elimination of large educational organizations and of their requirements for administrators and routines in order to permit collaborative learning among teachers and students.

In the past half dozen years, Seymour Sarason has published a series of books, based on his experiences as director of the Psycho-Educational Clinic at Yale, which discuss the structural nature of organizations and the importance of that structure for any considerations of major change. He indicates that most people, both inside and outside of educational organizations, are unaware of many aspects of those organizations and of the important connections which various processes and characteristics have with each other. He also communicates the importance of understanding the perceptions which organizational members have of the nature and functioning of their organization (Sarason, 1971).

There is a vast literature on organizations, how to conceptualize them, how they are seen to be structured, how they are believed to function. For the purposes of this project, some central ideas were matched with information on the SWF program, and four general organizational dimensions were defined. The four are: Goals, Roles, Rewards, and Problem Solving. Each will be discussed in turn below.

(1) Goals

In research on organizations, interest is often focused on goal clarity and agreement (Gross, 1965; March & Simon, 1958; Weiland, 1969). There is also recognition of the functions of goals in influencing activities within the organization (Likert, 1967; Schmuck et al., 1972; Etzioni, 1964). In this project, the interest in organizational goals is in the importance attributed by school staff members to the goals of the SWF program. In this program, the primary set for the school has to do with student outcomes. Glasser (1969) writes of the importance of the school faculty formulating a philosophy of education. He also discusses desired student outcomes, including their development of skills in relating to others, in accomplishing relevant school tasks, in thinking, in being responsible, etc. For a school to be supportive of those student outcomes, one would anticipate that the staff would rate such goals as important to them.

Glasser also discusses a number of instrumental goals, including various activities and accomplishments of teachers, ways faculty members work with each other, and relationships with parents.

(2) Roles

Another concept regarding organizations which is useful for our work is that of role. The term is often used to refer to those activities of a person in a particular job in an organization. The term is sometimes used to mean those activities which people in the position actually do, and it is sometimes used to describe those activities which such people are expected to do.

It was decided that in this project we would focus on two roles of central significance to schools, that of the teacher and that of the principal.

There have been a number of scholarly examinations of the role of the teacher. One of the earlier ones was by Waller (1961). He discussed the pervasive impact of the dominance-subordination relationship between teachers and students. He observed that the roles defined that relationship and that it had a significant impact on their ability to work with each other to promote learning. In more recent years, Biddle, Adams, and others (e.g., Biddle, Rosencranz, & Raskin, 1963) engaged in extensive examination of activities of teachers. W. W. Charters, Foskett, and others at the Center for Educational Policy and Management at the University of Oregon have conducted a series of studies involving the role of teachers. (E.g., Charters, no date; Foskett, 1967.) Sarason, after working in schools a number of years while Director of the Psycho-Educational Clinic, wrote of the impact of organizational structure on the way people act in schools (1971). He pointed to the importance of understanding the roles which people had in those institutions.

While there is much literature on teachers and their roles (see, for example, Hoyle, 1969; Grace, 1972; Jenkins, 1960; Getzels & Guba, 1955, Beck et al., 1968; Oeser, 1955; and Lortie, 1975), there is not much in terms of roles oriented toward particular student goals, except in program manuals such as those for reading programs. One example of prescriptions for teacher behavior for an inquiry program are suggested by Postman and Weingartner (1969).

The interest in this project regarding teacher role concerns whether teacher engagement in activities relevant to a particular program do have the consequences for student outcome intended by that program. Therefore, we are interested in examining the teacher role in terms of those activities which the program prescribes for them.

Glasser discusses at length the behaviors and orientations he feel are important for the teacher in his book, Schools Without Failure (1969). These have to do with the conduct of class discussions, the building of a relationship of concern with the students, the stimulation of student thought, the support of student planning, holding students responsible, etc. In addition, teachers are expected to participate in faculty problem solving, to work on curriculum development, to help each other.

The second role of great interest in this project is that of the principal. One of the classic studies of the role of the principal was that done by Gross and Harriott (1965). In this research, the authors developed several clusters of behaviors by principals which they believed were important. The one receiving most attention was that of Executive Professional Leadership, which they defined as the efforts of an executive of a professionally staffed organization to conform to a definition of his role that stresses his obligation to improve the quality of staff performance.

Another early study important to school administration was that by Halpin (1959), which extended the constructs Initiating Structure and Consideration to the field of education.

As before, our interest is particularly oriented toward those behaviors which are important to the implementation of the SWF program. The materials of the SWF program indicate that the principal is to help teachers learn how to conduct appropriate class discussions. The principal is to model attention to success and accomplishment and the avoidance of emphasis on failure and punishment, to support collaborative action (on the part if the teachers), and other behaviors which teachers are to use with students. The principal is to obtain and allocate resources in ways which support teacher efforts to implement the SWF program. The principal also has specific responsibilities to work with students who cannot, temporarily, work within the class setting.

(3) Rewards

Students of organizational behavior have long given attention to the processes by which members could be persuaded to do those things which needed to be done for the organization to be effective and efficient. March and Simon (1958) provide an extensive discussion of the topic, especially factors affecting individual productivity. Whyte and his colleagues (1955) were among those scholars to demonstrate that many factors other than monetary pay had great impact on individual performance. Likert (1967) argued that economic rewards should be linked to behaviors which promoted the cooperative relationships needed in modern organizations. Likert also urged full use of other incentives than the financial ones. Lortie (1975) noted that teachers rarely receive overt honors for their achievements.

Glasser does not make a major point of rewards for appropriate performance. His philosophy is oriented toward intrinsic rewards, the satisfaction that comes from attainment of goals established by oneself. In some of their communications, ETC staff report a mild concern that students not be made into "praise junkies."

Nonetheless, the decision was made to examine this dimension of organizational behavior to determine whether it made a difference in the outcomes of students.

(4) Decision Making/Problem Solving

Glasser makes a very strong point of the importance of teachers being involved in the processes of change in their schools. He writes (1969, p. 117):

> In most schools it is difficult for changes to get started because one of the requisites for change--that teachers have time to meet as a group--is not met. Teachers need time to discuss, develop, and accept new approaches, to see demonstrations, and to receive repeated instruction. Instead of a working, cohesive, problem-solving faculty group, most faculties consist of teachers working alone in their classes, each doing the best she can with little knowledge or understanding of what the other teachers in the school are doing. . . .

One of the strongest voices in the late 1950's and early 1960's for participation of people in decisions affecting their lives was Rensis Likert. His ideas were applied to organizations and especially managers of organizations. In The Human Organization (1967), he explains in detail participative management, which was then becoming System 4, in his terminology. Others who have been active in a similar vein are McGregor (1960) and, much more extensively, Argyris (1957, 1964). Maier (1970) has done extensive work on group problem solving. One of his contributions is the value of considering whether group members have the kind of information which will favorably influence a decision and whether they will have to carry out whatever decision is reached.

These sources all indicate the importance of examining the organizational arrangements in the schools in this study to determine whether the problem solving/decision making practices are related to student outcomes.

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c. Review of Research done on SWF

There have been a number of reports of information collection activities regarding the Schools Without Failure program. There is much variation in the extent to which the information so generated can be generalized to other situations. Some of the information is essentially anecdotal, a report of impressions or perceptions. Some of the information is based on rather systematic data collection and analysis with careful thought given to the selection of sources of data, of data collection procedures, and of controls to increase the accuracy and dependability of the information developed.

There is also considerable variation in the topics about which information was developed. For the purposes of reviewing other research on the SWF program, it will be organized by those topics: student outcomes, staff outcomes, program implementation, and the relationship of program implementation to program outcomes. Information, if available, about the nature of the data collection processes will be reported with the material under those topics.

(1) Student Outcomes

In a report at the end of the first year of participation in the program, the Department of Instructional Services and Development in the Kansas City, Missouri, Public Schools, found no impact on student achievement in Vocabulary, Reading, or Arithmetic subtests of the Iowa Tests of Basic Skills (1973).

Elliott reported on data from eight junior high schools, both urban and suburban, in a midwestern metropolitan area (1976). While there were not control groups, he was able to study change in student attitudes over time for students with different levels of exposure to SWF-trained teachers. He found that, with increasing exposure up to a point there was improvement in attitudes toward self and toward school, in terms of SWF objectives.

In a study done much earlier, English (1970) compared three small groups of fourth through sixth grade, low-achieving, students of low to high-average IQ, who were assigned to one of three treatments: reality therapy (SWF), performance/reward, or instructional groups. Pre- and post-measures were obtained over a 15-week period during which students met once each week for 30 minutes in their group. The reality therapy group was significantly better at the end of the period in reading achievement, self confidence, self-concept, and classroom behavior than the instructional group.

Gang (1975) reported research on two teachers whom he trained and who participated in the regular Educator Training Center training. Each teacher selected a student from each of three classes. The teachers gave each target child special personal attention. Trained observers observed the classes periodically during the study. Student problem behaviors decreased and desirable behavior increased for each student.

Hawes (1970) studied third and sixth grade black children in two Los Angeles schools eligible for Title I funds. One had the SWF program, the other did not. Students in the SWF program were significantly different in belief in internal locus of control. Self-concept was not significantly affected by the treatment. Students in the SWF school increased task-relevant behavior, information seeking and processing behavior, and child-initiated interactions. There was a decrease in complaint behavior.

Based on personal experience, Jensen (1973) reported a reduction in truancy, vandalism, disruption and disturbance, fighting, and grade failures as a consequence of involvement of staff from elementary, middle school, and central office staff in SWF training.

Keepes, Engle, and Thorne (1971), in a study conducted in two unmatched Palo Alto schools, found that students in the SWF school were more task oriented and more inclined to be involved in work-type activities than were students in the "control" school.

In a project involving elementary students, Krueger (1971) found favorable attitudes toward class meetings and the effects of those meetings on getting to know and understand their classmates.

A study comparing student outcomes in participating and non-participating elementary schools was reported by Malcom (1975). The schools were matched geographically, three were ones in which teachers had participated in at least one SWF seminar, and three were ones in which teachers had not participated. There was some indication that students in SWF schools had more favorable attitudes about themselves and school, but it was not extensive.

Masters, Laverty, and Hayes (1975) reported results of a two-year study of the implementation of the program in the schools of a small community in Pennsylvania. Elementary schools were paired for size, socioeconomic status, and achievement test scores. One member of each pair was randomly assigned to start the program the first year, with the other starting the second year. Comparisons could thus be made between the two groups. They found that primary level students tended to feel more confident of their ability to deal with difficult school work, and intermediate level students saw school and learning as more important. In most cases, there were not any differences in student achievement. The exception was for second grade students who had been in the program two years. They appeared to have higher achievement.

McCormick (1972) reported that teachers found students better able to participate in intellectual discussions and to discuss school problems as a result of participation in the SWF program.

These results indicate, with varying degrees of certainty, that there are favorable changes in student attitudes and behavior in many cases, but rarely is there change in student achievement. The data also show that the program seldom has a negative impact. (The only indication was in Brownlee's data, where exposure to more teachers who had the training beyond a certain point was associated with a downward trend in student attitudes following an upward trend.)

(2) Staff Outcomes

Butterworth (1971) found that the change in favorableness of teacher attitudes toward the SWF program was related to the extent of their participation in the program.

In the study done in both urban and suburban junior high schools, Elliott (1976) reported that teachers practiced reality therapy, held class meetings, and made changes in the curriculum. That is, they implemented the program.

Similarly, Jensen (1973) found that teachers with experience in the program were favorably disposed toward it. They also thought that improved communication within the schools and to the community resulted. There was not a pretest nor a comparison group.

Krueger (1971) reported that teachers generally were favorable about the effects of the program. No comparison group was involved.

Attitudes of teachers who participated in training were more favorable toward education and toward the SWF philosophy than teachers who did not participate in the study reported by Malcom. Data were obtained in six elementary schools, three of which had faculty members who participated and three did not.

Teacher attitudes did not appear to change consistently, according to the study by Masters, Laverty, and Hayes (1975). However, their behavior did. They held class meetings, used reality therapy with discipline problems, and changed their instructional methods.

A study by Purl (1971) in four elementary schools provides information on self-reports of change. Reported to be a result of participation in the SWF program, 76 percent reported changes in discipline and approximately a quarter of the teachers reported changes in grading, testing, grouping, parent conferences, and in the curriculum. No comparisons with non-participating teachers were reported.

A relationship was found between participation in SWF seminars and teacher orientations toward the solution of educational problems by Robert (1971). On the basis of comparisons between teachers who participated in SWF seminars and teachers who had not, he found that participating teachers were more oriented toward the personality needs of the individual and more flexible in the kinds of solutions they preferred for hypothetical problems in the school setting.

Thaw (1971) reported upward shifts on scores on the Minnesota Teacher Attitude Inventory for teachers in an SWF group in comparison with no change in a comparison group.

These data indicate that teacher attitudes and sometimes behavior are often changed by participation in SWF training activities.

(3) Program Implementation

The data on program implementation, particularly, is of a varied nature and quality.

Elliott (1976) reported that teachers engaged in the criterion amount of class meetings and practiced reality therapy using teacher logs as the information source.

On the basis of his own observation, Jensen (1973) reported increases in teacher dialogue with each other, with students, and with parents.

Probably the most systematic data in other research on the SWF program on program implementation was the study by Masters, Laverty, and Hayes (1975). Using trained observers in the classroom, they concluded that trained teachers used questions more and lectured less; accepted student ideas more; praised more, and criticized less. There were comparison teachers for this study.

Purl (1971) also used self reports as evidence of changes reflecting program implementation.

In general, the data on program implementation is sparse and often subject to unknown bias.

(4) Relationship of Program Implementation to Student Outcome

While much of the information available about the SWF program suggests or infers such a relationship--and probably with adequate logic in some cases--there seems to be little or no information showing the relationship between measures of implementation and measures of student outcome.

The present study has done that and will report the results below in sections IV and V of this report.

B. Objectives

The over-all objective of the research project was to determine whether various aspects of a program which was designed to promote effective child development in schools had the desired impact on their development. That is, the SWF program proposed that, through training, teachers and principals would be able to work differently with boys and girls, who would then exhibit characteristics and performances different from similar students who had not been in such classes and schools.

Three major aspects of the program which were chosen for study were the fact of staff participation in training classroom characteristics reflecting program implementation, and school characteristics reflecting program implementation. To state this in more detail, the research project was designed to determine the impact on student cognitive, affective, and social outcomes of:

1. School staff participation in SWF training activities;
2. The extent to which the immediate learning environment (classroom) exhibited:
    a. A relationship among teacher and students reflecting caring and concern;
    b. Activities and materials clarifying the relationship of life in school to life outside;
    c. Opportunities and encouragement for student participation in the design and execution of learning activities;
    d. Opportunities and encouragement for student thinking, as differentiated from memorizing;
    e. Attention to goal attainment in contrast to failure.
3. Extent to which the school, as an organization, was seen as exemplifying support for student achievement through
    a. Importance attributed to program-relevant goals;
    b. Teachers engaging in activities important to the program;
    c. Teachers being rewarded for activities;
    d. Principals providing leadership helpful to teachers and to implementation of the program;
    e. Faculty problem-solving effectiveness.

C. Structure of the Report

The research project was designed around three basic questions, which can be paraphrased as follows:

1. Does faculty participation in the SWF training program lead to different outcomes for students?

2. Do SWF classroom characteristics lead to different outcomes?

3. Do SWF school organization characteristics lead to different outcomes?

The project was designed to study these questions two years in succession.

Therefore the report is organized by question by year. Part III of the report provides information on Question I, with section A reporting the first year and section B reporting the second year. For each year, information is provided on objectives, design, measurement, sample, data collection, and results.

Part IV of the report deals with Question 2, and Part V deals with Question 3. Part VI includes conclusions and recommendations.

III. ANALYSES REGARDING SCHOOLS WITHOUT FAILURE AND COMPARISON SCHOOLS

The research to be reported in this section concerns the work done in pursuit of the first question posed by this project: "Do students in classes participating in the SWF program have more favorable outcomes in affective, social, and cognitive areas than students in classes not participating in the program?"

The intent of this question is to determine whether participation of school staff members in the program of training has resulted in differences for students. (It should be noted that the question does not ask whether the classroom or school activities and conditions envisioned by the Schools Without Failure program do exist in fact in the SWF schools. The second and third questions deal with the impact of those variables.)

To more thoroughly study the question stated above, the study was repeated two years in succession. Section A of this part of the report will discuss the first year. Section B will discuss the second year.

A. The First Test—Year 1

1. Objectives

The first year of work on this question was intended to test the null hypothesis that no differences would occur in student outcomes between students who were in SWF schools and students who were not in such schools but who were similar in socioeconomic status and academic performance.

2. Design

The intended design for the first year was a post only, experimental-comparison analysis, controlling on grade, SES, and academic performance (I.Q.). It is shown below in Table IIIA-1.

Twelve outcome measures were selected to reflect cognitive, affective, and social outcomes for students. Given a large number of outcomes (dependent variables), it becomes important to consider ways of dealing with them collectively. The basic question of the research is, Does the SWF program make a difference for students? The interest is in the larger picture rather than the details of each possible outcome.

Table IIIA-1

Basic Design for SWF Program Participation Analysis, 1974-75

Grade	Participation	Approximate Number of Students	1974-75 School Year Activities	
Grade 4	SWF	250	Treatment	Posttest
	Comparison	250	(No)Treatment	Posttest
Grade 5	SWF	250	Treatment	Posttest
	Comparison	250	(No)Treatment	Posttest

As will be discussed below, several considerations led to the decision to use analysis of variance as the basic analytic approach. Therefore, with multiple outcomes, it was decided to use multivariate analysis of variance (MANOVA) as the analysis procedure.

It was also decided not to include all outcomes in a single analysis but rather to split them into two parts, the cognitive outcomes and the affective/social. A MANOVA was done for each set.

It was initially intended to use IQ and socioeconomic status as covariates. The data which were obtainable regarding socioeconomic status, however, were not on an individual student basis. Instead, the proportion of students in the school receiving free lunches had to be used. Therefore, it was decided to treat socioeconomic status as a factor.

Initial runs were made to examine the effects of IQ and sex. Both were found to have an effect, although sex had a limited effect on variance (less than 2.1% of the variance was accounted for by sex when treated as a covariate). Examination of sex differences in the means produced no consistent patterns across grades and income levels, and very few reached significance. Therefore, it was decided to drop sex as a variable.

IQ differences across Grade, Program, and Income levels were examined. Differences across Grade and Program within Income levels were not significant. Differences across Income levels were significant. Since IQ was closely allied with Income, and since Income was to be a factor in the analysis, it was decided to consider IQ as interwoven with Income and not treat it as a separate variable.

The analytic approach, then, was a three-factor multivariate analysis of variance. A separate analysis was done for each independent variable for cognitive outcomes and for affective/social outcomes. The design of the analysis is reflected in Table IIIA-2, appropriate to the first year.

Students are allocated to appropriate cells according to the participation of their school staff in SWF, and their data are used in the analysis. When the study was originally designed, the analysis plan called for using the individual student as the unit of analysis. This is a fairly common procedure. However, it is not quite as technically appropriate as using the class as the unit of analysis. In this study, the analyses were run both ways. In the main, the difference between the analyses is that fewer were significant at the class level than at the individual level. To permit those people who are interested in "trends" and "tendencies" as well as highly significant findings to be able to mine the study, we have chosen to present the MANOVAs both ways and the ANOVAS for the individual as the unit of analysis.

Multivariance, a computer program developed by Jeremy Finn (1974, 1976) was selected. The program performs an exact least-squares analysis using the method described by Bock (1963). The program produces multivariate and univariate output. That is, the program performs a MANOVA on all outcomes (that is, say, all seven cognitive outcomes for Year 1), then follows that with an analysis of variance (ANOVA) for each of the outcomes.

With the decision to use MANOVA as the analytic approach, it is generally agreed that, unless the MANOVA is significant, examination of individual variables (univariate analysis) is not appropriate. Therefore, this report will consider significant ANOVA on individual outcomes only when the MANOVA has been significant.

There are a number of complicating aspects to the analyses. The basic question is being asked for students in different grades, in different income categories, and for several outcomes simultaneously. As a consequence, significant results can be found for differences between income levels or grades, and the differences can be in opposite directions, in terms of whether high student outcomes accompany high SWF conditions or low.

These complicating conditions and results require careful interpretation and reporting. The discussion of results for Question 1 for Year 1 has been made rather detailed to enable the reader to follow the analysis. (See section III.A.6. below.)

Table IIIA-2

Design of Three-Factor, Multivariate ANOVA

Outcomes	School Income Level	Grade 4		Grade 5	
		SWF	Comparison	SWF	Comparison
A	High	--	--	--	--
	Medium	--	--	--	--
	Low	--	--	--	--
B	High	--	--	--	--
	Medium	--	--	--	--
	Low	--	--	--	--
C	High	--	--	--	--
	Medium	--	--	--	--
	Low	--	--	--	--
etc.	High	--	--	--	--
	Medium	--	--	--	--
	Low	--	--	--	--

Because the MANOVA is done in a step-wise fashion, the three factors were re-ordered and run so that each took its turn in the last (third) position. The data on main effects to be presented will come from that run in which that factor was in the final position. In this way, the effect attributed to that factor will not include the impact of other factors. The program is designed to carry out the analysis in ways which accommodate unequal numbers of cases in the various categories, or cells, created by the three-factor design. Finn writes (1974, p. 8):

> In multiple regression there is no necessary restriction upon the correlations of the predictor variables. Also, in analysis of variance the independent variables may be correlated. Specifically, this implies that valid and exact analyses of variance may be conducted with unequal subclass frequencies, and with constrast parameters that are not orthogonal. . . .

3. Measures

a. Cognitive Measures

(1) Achievement of Basic Skills

An enduring concern of supporters and critics of elementary and secondary education revolves around the ability of students to read, write, and compute. Whenever changes are made in educational activities or conditions, the impact of those changes on student basic educational outcomes is questioned. The SWF program recognized the importance of tool skills. The program also emphasized the importance of developing the capacity of students to engage in productive thinking. Therefore, some evidence of the impact of the program on three kinds of skills was sought. Reading and mathematics seemed naturals. In addition, it seemed desirable to obtain evidence of skills relvant to productive thinking and problem solving.

Since the school district in which the study was done routinely administers the Iowa Tests of Basic Skills, it was decided to utilize the Reading Comprehension Test for reading; the Knowledge and Use of References as a measure relevant to productive thinking and problem solving; and the Mathematics Problem Solving Test for achievement of a basic skill in a problem solving context.

The ITBS tests were re-developed in the 1960s and early 1970s to increase the relevance of the results for educational conditions in schools today. (The previous versions of the tests had been developed in the early 1950s.) The authors report longitudinal stability coefficients for grades 4-5 and 5-6 as follows (Hieronymus & Lindquist, 1974, p. 64):

Table IIIA-3

ITBS Longitudinal Stability Over One Year

Grades	Reading	Knowledge and Use of References	Mathematics Problem Solving
4-5	.81	.70	.66
5-6	.84	.80	.73

(2) Productive Thinking

One of the central points made in the literature regarding the SWF program is the importance of helping students learn to think rather than to simply memorize. Therefore, it was important for our project to identify approaches to measuring the ability of students to "think." A great deal of work has been done over the years in studying thought processes from a variety of viewpoints. Some discussions of this can be found in Davis (1973); Guilford (1967); Rimoldi (1967); Newell and Simon (1972); and Treffinger, Renzulli, and Feldhusen (1971). A series of studies regarding individual and group problem solving was brought together in a book by N. R. F. Maier (1970).

In addition to the above, contacts were made with a number of people who had done some measurement of problem solving or productive thinking or had made efforts to stimulate skills in such areas. Some explorations were made in the materials and literature in regard to games and simulations. From these works, a number of possible measures were identified, including the following:

1. Guilford -- a number of tests were developed for children around the Structure of Intellect model. These tests are currently marketed by the Sheridan Psychological Services. (See References.)

2. Molitor -- She developed the Science Process Skills Test and used it with students in grades 4, 5, and 6. However, the author advised against using the test for our purposes (Molitor, 1974).

3. Raven -- The Coloured Progressive Matrices have been described as not being tests of general intelligence, but of non-verbal intellectual ability. They are intended to assess the child's ability to complete simple patterns, to engage in concrete reasoning by spatial analogy, in abstract reasoning by analogy (1962).

4. Torrance -- The Torrance Tests of Creative Thinking (TTCT) have had extensive use in the assessment of creative thinking (1966).

There are both Verbal and Figural problems. Three scores are generally obtained: Fluency, Flexibility, and Originality.

5. Speedie, Treffinger, and Feldhusen -- These authors report a series of Simulated Problem Situations which were intended to be relevant to youngsters and yield measures of problem solving process (1973).

Several criteria were selected for evaluating the appropriateness of these measures for the purposes of this project. These will be discussed in the paragraphs below.

The first concern is validity. Since there is not agreement in the literature regarding a precise definition of productive thinking or of creative thinking, evidence for validity is not likely to be universally accepted. Various approaches have been used by various authors, such as independent judgments which differentiate people into high and low groups. Such approaches have been used with architects and others. For the special purposes of this project, we sought tests that would be appropriate to the lives of students in grades 4 through 6.

A second criterion for the selection of tests was reliability. The major consideration for which we sought evidence was internal consistency. According to Nunnally (1967, p. 211):

> Coefficient alpha provides a good estimate of reliability in most situations, since the major source of measurement error is because of the sampling of content. Also, previously it was shown that reliability estimates based on internal consistency actually consider sources of error that are based not, strictly speaking, on the sampling of items per se, but on the "sampling" of situational factors accompanying the items.

In that same book, Nunnally discusses the standards of reliability by which instruments should be evaluated. Relevant to our purposes he says (p. 226)

> In the early stages of research on predictor tests or hypothesized measures of a construct, one saves time and energy by working with instruments that have only modest reliability, for which purposes reliability of .60 or .50 will suffice . . .

> For basic research, it can be argued that increasing reliabilities beyond .80 is often wasteful. At that level correlations are attenuated very little by measurement error . . .

A third criterion which was applied was that data collection be minimally affected by the students' ability to read. This criterion was not applied to the ITBS, which was discussed above. It was an important consideration for the rest of the data collected from the students.

The final criterion applied was feasibility which had two components. The first component was that the data could be collected in a group setting. It was concluded that it would not be possible to remove a set of students from their class for data collection purposes and that we would not be able to test students individually. The second consideration was the acceptability of the test content and procedure to students, school staffs, and community members. In recent years, at least two studies were either blocked or discontinued in this school district because of community complaints regarding particular data collection procedures for research purposes.

The application of these criteria resulted in the decision to pretest measures developed by Guilford and by Torrance.

Four of the activities in the Torrance Tests of Creative Thinking were selected for initial testing. The first of these is labeled Asking. Torrance says about this kind of activity (p. 10), ". . . It was included in the battery to give subjects an opportunity to express their curiosity and give a picture of their ability to develop hypotheses and think in terms of possibles. . . ."

A second activity selected was labeled Product Improvement. Torrance says about this activity (p. 11), ". . . It is a complex task with a high degree of face validity . . . It . . . enables them to play with ideas that they would not dare express in a more serious task . . ."

The third activity selected was labeled Unusual Uses. Torrance says of this activity (p. 12), "The author recognized at the outset that /Unusual Uses/ create in many individuals rigid sets that are difficult to overcome. . . . Thus, the task is in part a test of ability to free one's mind of a well-established set . . ."

The final activity from the Torrance battery was labeled Just Suppose. Torrance says (p. 13), ". . . This variation was designed in an attempt to elicit a higher degree of spontaneity and to be more effective with children. . . . In order to respond productively to this task, the subject must 'play with' the possibility and imagine all of the things that would happen as a consequence . . ."

In addition to those activities developed by Torrance, two which were developed by Guilford and his associates were also chosen. The first of these was labeled Unlikely Things (Sheridan Psychological Services, 1972). This test requires the student to look at a line drawing which incorporates a number of unlikely things. Four statements describing unlikely things in the line drawing are presented to the subject, and s/he is to choose those which are most unlikely. This activity is intended to tap the Structure of Intellect ability of evaluation of semantic systems.

The second of those developed by Guilford and others is labeled What To Do With It. In this activity, the student is requested to think of unusual things which might be done with relatively commonplace objects. The authors indicate that this instrument was developed for the purpose of measuring spontaneous flexibility (divergent production of semantic classes), the ability to produce a variety of class ideas in connection with an object or the unit of thought.

In order to answer several questions regarding the appropriateness of these tests for the purposes of this study, it was decided to conduct pre-tests with comparable students in another city.

The basic questions regarding the TTCT tests were: (1) Which of the four seemed to best permit inner-city students to demonstrate their abilities? and (2) What is the impact on student scores of the requirement that students write their answers? To answer the first question, student scores and student reactions to the four tests were compared. To answer the second question, data on two of the tests were obtained from some classes in a group setting and from samples of students in those classes on the other two tests individually.

The basic questions concerning the two Guilford tests were: (1) How do students perform, and (2) How do students react to them?

It was also of importance to determine how performance on the TTCT compared with performance on the Guilford tests.

To summarize the results, on the TTCT students performed better on Product Improvement and Unusual Uses than on Asking and Just Suppose. It was the impression of the data collectors that students seemed better able to grasp the task and proceed on those tests on which the students scored more highly.

Turning to the question about the impact of writing ability, the correlations between scores on tests taken in a group administration were correlated with scores taken in an individual situation. Correlation among student scores on group-administered tests and individual-administered tests were: (N = 30) for Fluency, r = .56; for Flexibility, .55; and for Originality, .35. These correlations compare favorably with those for relationships between the two individually administered tests: (N = 30) Fluency, .42; Flexibility, .32; and Originality, .26.

To further examine the impact of writing ability, the data from the fourteen (of 30) students who had low scores on both group-administered tests were further examined. Their scores on the individually-administered tests were examined to determine whether they scored above the mean. Four students did score above the mean on each of the other tests. Only one student was above the mean on both.

Thus, it appears that the writing requirement does not distort group means noticeably and generally does not penalize students.

b. Affective/Social Measures

It is interesting to remind ourselves that the SWF program was developed by a psychiatrist. The emphasis which that might give to affective or emotional outcomes for students is clear, yet, Glasser believes that students need tool skills (like reading and math) and ability to think. Certainly, however, he does not neglect emotional considerations and their linkage to social outcomes.

However, some educators, upon hearing Glasser describe his concepts and program, have asked each other, "So what's new?" Many educators--at least of those who get their ideas in print--believe that schools should assist students attain affective and social objectives.

The student outcomes selected for measurement in these areas were chosen in part for their importance to the SWF program (and, therefore, the likelihood of their being enhanced for students in the program) and in part because they fit the conceptions of others about desirable outcomes for students. (See, for example, Combs, 1966; Hamachek, 1972; Lembo, 1972; Schmuck, 1962; Glidewell, et al., 1966; Johnson, 1970.)

Although a psychiatrist, Glasser uses a more cognitive approach. His orientation is (see Reality Therapy, 1965) that people having difficulty in living have not learned to relate to other people to get their needs met. He sees as a primary goal helping people (in the present case, students) develop a sense of success--having the ability to do their work. He also emphasizes the need to develop a sense of responsibility for the consequences of one's actions. Glasser states that students will have better attitudes toward school when they are succeeding, and see themselves able and responsible. Therefore, the following variables and instruments were chosen:

Variable	Measure
Sense of ability to succeed	Sense of Competence as a Learner (SOCL)
Attitude toward school	Pupil Opinion Questionnaire (POQ)
Responsibility	Intellectual Achievement Responsibility (IAR)
Ability to get one's needs met	Giving Help and Getting Help

The following sections of this part of the report will discuss the measurements used.

(1) Sense of Competence as a Learner

The target of this measure is in an area sometimes defined as self-concept. Since the focus of the Schools Without Failure program has been on students seeing themselves as successful, as able to perform the activities required by their situation, the variable is more narrowly defined than a general self concept. The goal was to measure the student's sense of competence in the learning situation. It seems reasonable that the school experience is most likely to impact the students' views of their competence at things involved in being a student. An appropriate assessment, therefore, should concentrate on the sense that a student has of being able to handle successfully the tasks and conditions he encounters at school. Within recent years there have been increasing emphases upon studies that define and specify these various elements of self-concept and their social psychological correlates (Bradley & Newhouse, 1975; Cooper, 1972; Coopersmith, 1959, 1967; Guardo, 1969; Smith, 1968; White, 1959). A number of studies have developed around the self-concept as a learner and the relation of this to performance of school tasks (Brookover, Thomas & Paterson, 1964; Fink, 1962; Primavera, Simon & Primavera, 1974; Simon & Simon, 1975).

The general findings from these studies suggest that students who feel good about their ability to learn in school are more likely to become successful in familiar academic problem solving activities than students with limited sense of competence around their role in learning. Some findings are reported which suggest that students' sense of competence as learners may also be related to successful involvement in new and different problem-solving tasks involving creative thinking (Felker, 1974). The implication is that students with a high sense of competence do not fear failure in a new learning task requiring expression of unusual ideas. That sense of competence as a learner is probably a major variable in learning and performing successfully in school has been suggested in a number of studies (Glasser, 1969; Hamachek, 1972; Linton, 1972).

In the search for an adequate measure of sense of competence, the focus was kept on an assessment of experiences in the school setting. Thus, measures which included assessment of matters at home or in life generally were rejected.

Among the measures reviewed were those developed by Bolea (Bolea, Felker, & Barnes, 1971), Brookover (Brookover, LePere, Hamachek, Thomas, & Erickson, 1965), Coopersmith (Coopersmith, 1959), Piers and Harris (Piers & Harris, 1969), Sears (Sears & Sherman, 1964), and Liddle and Waetjen (Liddle et al., 1967).

Given the intent of the study to focus on sense of competence in the school setting and to collect data from students in grades four through six, most of the instruments of those authors were not quite appropriate. Many obtained information about a broader scope than the school. Some seemed to be more relevant to older youngsters.

The final decision was to use the instrument created by Waetjen and modified by Liddle for use with elementary school students. Franks and Dillon (Franks, 1974) used the instrument in a study of open education and obtained a reliability score of .82 (Cronbach's alpha) on 460 students in grades seven and eight. In the present study, an alpha of .80 was obtained in the data collection for the first year on 792 students in grades four and five. In the pretest for the second year, an alpha of .82 was obtained on 968 students in grades five and six.

The instrument, named for this study the Sense of Competence as a Learner (SOCL), is a 36-item, group-administered, paper and pencil inventory which obtains student description of school experiences and ways the student deals with them. The response required of the student is to mark a Yes or No, reflecting whether the statement was true or not true for her/him. The instructions and all items were read to the students by the data collector in order to reduce the impact of student reading skills on responses.

(2) Student Attitudes Toward School

Two instruments were identified as relevant for use with elementary school students. One was the Pupil Opinion Questionnaire developed by Bowman and Havlicek (undated) and by Glick (1967, 1972).

The second was developed by the Pennsylvania Department of Education (1970). The Pupil Opinion Questionnaire was a 60-item questionnaire with a 5-point Likert-type response scale. Factor analyses identified attitudes toward (1) school in general, (2) school work, (3) teacher, and (4) peers.

The Pennsylvania instrument had 19 items. A factor analysis indicated one general factor, interest in school.

It was decided to use the Pupil Opinion Questionnaire (POQ) as it assessed more distinctly several areas of school activity. The developers reported October to May test-retest correlations on five classrooms averaged .73.

Initial data collection was done on the current project with 53 items. Item analyses reduced the total to 45 items. The reliability of those items, measured by Cronbach's alpha, was .83 on 650 students in grades 4 and 5, in the first year of data collection. An alpha of .87 was obtained on 906 students in the pretest of the second year of the study.

(3) Responsibility as a Student

In searching for appropriate measures, it soon became evident that measurement developed around the concept of locus of control would be appropriate for our purposes. The instrument called Intellectual Achievement Responsibility, developed by Crandall et al. (1965) seemed most relevant. It was developed for use with children and focussed on school settings. Test-retest reliability (over a two-month period) for 47 third, fourth, and fifth graders was reported to be .69 (Crandall, 1965, p. 100).

Five of the 34 items in the IAR requested the student to respond in terms of alternative behaviors of parents. To keep the data collection focussed on the school setting, these items were eliminated. Subsequent item analyses, including a Rasch analysis, led to the elimination of five additional items. The alpha coefficient for reliability for the pretest data of the second year for the IAR total was .694 based on data from 1055 students in grades 5 and 6.

The IAR has both positive and negative items which are sometimes scored separately to permit analysis of the differences between taking more responsibility for positive than for negative consequences or vice versa. It was decided to retain both in a single total score for this research project. The final set of items included 12 positive and 12 negatime items.

(4) Ability to Get One's Needs Met

Glasser wrote that it was important that people learn how to relate to each other to get their needs met. This suggests a kind of social competence. It was decided that a measure in this area would be desirable. Resource limitations prevented major developmental activities. However, an approach was pursued which involved having students rate each other on their ability to get and give help in the school setting. Only two questions were devised: How good a job does each of the following students do in giving help to other members of the class in getting things done here at school? (Like giving help with arithmetic or reading, or helping find books or pencils, or helping move things for a class activity and other things like that.); How good a job does each of the following students do in getting help from other members of the class in getting things done here at school? (Like getting help with arithmetic or reading, or getting help in finding books or pencils, or getting help in moving things for a class activity.)

Initial developmental work demonstrated that students could respond appropriately and that there was some differentiation in their response to the two items. Test-retest correlations (three weeks apart) were .51 (N = 41) for Giving and .63 (N = 47) for Getting on Grade 4 students.

Data from the first major data collection (Year 1 student outcomes) permitted analysis of relationships between these measures and other student outcomes. In general, correlations with achievement and IQ data were in .35 to .60 range, mostly significant at the .01 level. Correlations with affective measures, such as attitudes toward school, tended to be lower and, more often, not significant. This indicates that students rated by their peers as more able to give and get help are students who show more academic competence.

It was decided to retain both measures in the final analysis.

4. Sample

This section of the report will discuss the criteria used in selecting schools and classes to include in the study. Toward the end of this section, there is a discussion of criteria used in determining which students were finally included in the analyses.

a. Considerations in Selecting SWF Classes

(1) Participation in Training

To increase the likelihood that classes included would be those in which SWF practices were in progress, records regarding participation in the training program were reviewed and schools and teachers identified who had already completed two courses and two years in the program or who had completed one course and one year in the program and were (at the time of selection) in the second semester of a school year in which they were in a second course and second year of the program.

Consideration was given to having students and teachers at all grade levels. This presented many problems in terms of measurement procedures and obtaining comparison classes, and it was decided to focus data collections on fourth and fifth grades.

(2) Socioeconomic and Geographic Distribution

Many studies have identified the relationship between socioeconomic and demographic factors and student performance. (For example, see Levine, 1974, 1977). Therefore, school recruitment was designed to obtain a distribution of schools according to data regarding percent of students receiving free lunches for a school. Closely related to that was the desire to obtain geographic distribution, so schools were selected in the central city and more peripheral areas of the School District.

(3) Student Performance

Data regarding the average I.Q. of students in Grade 5 for each school was considered in order to increase the likelihood that the relationship of student academic performance and program outcomes could be considered.

(4) Willingness of Principals

When the school board of the District approved the project, they included the stipulation that participation by principals and teachers be voluntary. Therefore, research staff, having identified eligible schools according to the preceding criteria, approached principals to determine their willingness to participate in the program. At least one principal clearly decided against participating in the project. Generally, principals were receptive and willing to call meetings at which research staff could explain the project to the teachers in the school. The project offered two kinds of returns, educational and monetary. The research staff promised to provide at least one feedback session in which the data would be reported and discussed. Each teacher was promised group data for her class. In addition, teachers in whose classes data were to be collected from students were promised $15 to be used for an instructional purpose of their choice. Finally, all staff members who completed the instruments regarding organizational variables were to receive $5 for their time.

(5) Willingness of Teachers

Research staff made a special effort to meet with the Grade 4 and Grade 5 teachers prior to meeting with the whole faculty to explain the project, the confidentiality of the data, and the benefits they would receive for participating. It was stated that the Board of the School District had approved the project and had stipulated that staff participation was to be voluntary.

If at least some of the Grade 4 and 5 teachers were willing to participate, research staff then arranged with the principal to explain the project to the total staff. In general, the school staffs seemed to accept the views of the principal and the Grade 4 and 5 teachers regarding participation in the project. In one case, a faculty decided that they would rather not participate in the project and were not included.

b. Considerations in Selecting Comparison Classrooms

The general intent guiding selection of Comparison classrooms was to identify schools which were comparable to those selected from the SWF program set on the basis of SES (initial selection was based on the percent of families at the poverty level), geography, size, and average Grade 5 student I.Q. In addition, schools which had had any participation in the Success Schools program were not included nor were any teachers who had had experience in the Success Schools program included.

As before, willingness of the principals and the teachers was determined.

c. Sample Characteristics

Data were collected from students in seven SWF schools and seven Comparison schools. Eighteen of the classes were SWF and 20 were Comparison. The distribution of classes by Grade and Program are shown in Table IIIA-4. The Income split was based on proportion of students eligible for subsidized lunches in three categories: High=0 to 39%; Medium=40 to 79%; and Low=80 to 100%.

The student outcome data during the first year were collected from approximately 1,065 students. Of these, 155 were dropped for the following reasons:

(1) Insufficient Time in the Program

The research staff concluded that the students should have participated in either the SWF program or a non-SWF program for at least 60 school days by the end of March. This represented a minimum criterion of approximately 45 percent of the school days to that point in time.

Table IIIA-4

Distribution of Schools, Classes, and Students by Grade, Income, and Program Year 1

	Income	Grade 4		Grade 5	
		SWF	Comp	SWF	Comp
Schools*	High	3	3	2	3
	Medium	1	2	2	2
	Low	1	2	2	2
Classes	High	5	4	2	4
	Medium	3	3	4	3
	Low	1	3	3	3
Students	High	114	78	42	108
	Medium	84	71	114	71
	Low	25	64	82	57

*Same school may be represented at two grade levels, but not in both SWF and Comparison.

(2) Classrooms with Two Grades

Twenty-five students were eliminated because they were in classrooms housing two grade levels of students. Such classrooms were assigned to the grade level in which most students were located, and the students at that grade level were retained.

(3) Missing Data

Students who had missed one or more data collections, and therefore at least two of the outcome measures, were dropped prior to early analyses. Some students omitted answers to occasional questions. If a student had not omitted more than 10 percent of the items on a given measure, the class mean was substituted for those items, and score for the measure computed. This resulted in 910 students whose data were given initial analysis. The total number of respondents for a given instrument ranged from 840 to 909. The mean scores for each variable were computed by grade level. These are presented in Table III.A. under the subheading Main Sample, which is under each grade level.

The students whose data were included in the final set to be used in the major analyses were students selected from the 910 identified above. Students who were eliminated from the set of 910 before the final analyses were eliminated for one of the following reasons:

1. No I.Q. data were available for those students from the District.
2. The decision was made to analyze the data with multivariate analysis of variance, as discussed above. To permit analyses of cognitive outcome separately, it was decided to combine the seven cognitive outcome variables for one analysis, and the five affective and social outcome variables for the second analysis (for each independent variable). Those decisions influenced the inclusion of students in the final analyses. From the 910 students, those with complete data on the cognitive variables were included in that analysis, and those with complete data on the affective-social variables were included in that analysis. Approximately 600 students were in both analyses.

The means for those students are shown in Table IIIA-5 under the heading Final Sample, which is under each grade level.

A comparison of the means in that table indicates that the reduction of students for various reasons did not change the overall means significantly.

5. Data Collection

The social, affective, and most of the cognitive data were collected by personnel recruited and trained for this project. In accordance with School District policy, ITBS data were collected by teachers in those classes in which such data were routinely collected by the District. The collection was divided into two parts in order to obtain complete data on as many students as possible. For a more complete discussion of the sample of students on whom collected data were finally analyzed, see Section 4 on Sample above.

Table IIIA-5

Student Outcome Mean Scores for Basic Sample and Final Sample
Year 1

	Grade 4		Grade 5	
	Basic Sample N=436[a]	Final Sample N=385, 342[b]	Basic Sample N=474[a]	Final Sample N=390, 362[b]
I.Q.	95.4	95.8 96.9[c]	90.0	90.3 90.9[c]
ITBS Reading	3.81	3.89	4.19	4.21
ITBS References	3.81	3.85	4.48	4.52
ITBS Math Prob Solv	3.89	3.92	4.47	4.48
TTCT Fluency	20.14	20.64	23.35	23.73
TTCT Flexibility	10.22	10.41	11.12	11.18
TTCT Originality	22.26	22.89	26.75	27.42
Unlikely Things	29.04	29.36	29.40	29.42
SOCL	60.54	60.81	60.20	60.73
POQ	27.48	27.61	26.78	26.88
IAR	18.09	18.36	18.06	18.16
Giving Help	1.98	1.99	1.96	1.98
Getting Help	2.04	2.06	2.01	2.01

[a] N varies by measure.

[b] First number applies to Cognitive measures (above the line), second applies to Affective and Social measures (below the line).

[c] First number is I.Q. for Cognitive measures, second is for Affective and Social measures.

6. Results

As discussed in the section above on design, the analysis is a three-way, multivariate analysis of variance. The three factors are Grade, Income, and Program.

Multivariate analysis of variance (MANOVA) is complex, and three-way MANOVA is much more complex. This kind of an analysis presents such possibilities as the multiple outcome variables being affected differently and the factors being in interaction sometimes and not other times. While the authors are eager to present the results as simply as possible, it appears that the most complex result is also likely to be the most accurate.

To provide a framework for thinking about the results, the following sequence will be followed in the report. As indicated above, cognitive data will be analyzed first, and affective/social data will be presented second. The number of students in each of the groups created by the three-factor design will be reported first for each analysis. The next piece of information will be the mean scores by variable, based on using the individual as the unit of analysis, for each of the cells in the three-factor design.

The results of the MANOVA's for both the individual level and class level of analysis will then be presented. The significant results in the individual level MANOVA table will then be examined, starting with the interactions and working toward the main effects, where appropriate to do so. (This sequence permits determination of the extent to which interactions may be confounding main effects.) When an effect (main or interaction) is significant, the univariate ANOVA data will be presented so that those outcome variables which are significantly affected can be identified. Reference can then be made to the means table to determine which position in the factor structure has the higher outcome score.

The first analysis will be explained in detail in order to provide a model of the analysis and results.

a. Data on Cognitive Outcomes

The seven outcome variables included in this analysis are: three Iowa Tests of Basic Skills (ITBS) -- Reading, References, and Math Problem Solving; three scores from the Torrance Tests of Creative Thinking (TTCT) -- Fluency, Flexibility, and Originality; and one Guilford Structure of Intellect measure, Unlikely Things. (For a discussion of these instruments, see section III.A.3. above.) The distribution of students by Grade, Income, and Program is shown in Table IIIA-C1.* This reflects the fact that the students were not equally nor proportionally distributed across cells. This condition can distort results; however, Finn's Multivariance program has been designed to deal with such problems. In cases in which there were no students in a given factorial cell (i.e., of those created by the three-factor design), analyses involving that income level separately will be dropped.

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*Tables are given at the end of section a.

Each cell of Table IIIA-C1 includes more than one class except Grade 4, SWF, Low Income. The scores on cognitive outcomes for that class are low, and their position among the scores for the grade and income set of that class is mixed across outcomes. There is no evidence of bias in selection or data collection.

The mean scores for students in each of the factor cells (Grade by Income by Program) for each of the cognitive outcomes are provided in Table IIIA-C2. The apparent high score for each pair is underlined. Scores which are identical, or nearly so, are identified by an asterisk. (Since the actual data analysis will hinge on statistically significant findings, no decision rule for "apparent" score differences was established.) Comparing the means of SWF students with Comparison students at each Income level and for each Grade seems, at first, quite complicated. However, it is rewarding. For example, the Grade 4 and Grade 5 mean scores suggest that High and Medium Income school students generally do better on the ITBS scores in SWF schools than in Comparison schools. The data also suggest that Medium and Low Income school students in Grade 4 in SWF schools do better on the TTCT scores than students in Comparison schools. However, to determine what is sufficiently different to warrant attention, it is necessary to look at the statistical analysis.

The MANOVA results are presented in Table IIIA-C3. The top part is the individual level analysis, and the bottom part is the class level analysis. In comparing the two, one finds fewer reached significance in the class level analysis. However, there are no reversals in the data. Since the pattern of means is nearly identical in Grade 4 for both levels of analysis, and much the same in Grade 5, it appears that the main issue becomes one of the stringency one requires in determining significance for differences among means.

The remainder of the discussion regarding the cognitive outcomes for Question 1 will be based on using the individual student as the unit of analysis.

In the bottom two rows, the three-way interactions among Grade, Income, and Program are shown to be significant at the .05 level. (Since Income has three levels, the first line in the table reports interactions for High by Medium plus Low, and the second line reports interactions for Medium by Low.) Table IIIA-C4 provides the univariate ANOVA data for the three-way interaction when High Income is contrasted with Medium and Low combined. The data indicate that the interaction is not significant for the ITBS variables or Unlikely Things, but that it is for the TTCT variables. This matches the means in Table IIIA-C2. Those means indicate that students at the Grade 4 level in High Income Comparison schools are likely to score higher on the TTCT than are High Income school students in SWF schools. Students in Medium and Low Income SWF schools are likely to score higher than students in Comparison schools at the Grade 4 level. Results at the Grade 5 level on the TTCT variables are rather mixed, and have some tendency to be the reverse of those in Grade 4.

When the three-way interaction contrasts Medium with Low Income, significant effects are shown on Originality and Unlikely Things in Table IIIA-C4. In this interaction, the results for the two grades and two income levels are nearly totally reversed for the two programs.

Table IIIA-C3 shows that the Income by Program interactions are significant for both kinds of Income contrasts (High by Medium plus Low, and Medium by Low). It seems helpful to review the means in Table IIIA-C2 at this point. They show that High and Medium Income levels tend to parallel each other (in terms of SWF scores being higher) on the ITBS scores. This helps to explain why significance is not reached for the High by Medium plus Low Income contrasts (see p values in Table IIIA-C5 for that contrast), but that significance is reached for References and Math Problem Solving for the Medium by Low Income contrasts (see the p values in Table IIIA-C5 for that contrast). Thus, High and Medium Income school students tend to do better in SWF schools, while Low Income school students may do better in Comparison schools on the ITBS. These results hold relatively well for both grades. The same cannot be said for the TTCT scores. It appears that they are better accounted for in the three-way interaction discussed above.

Table IIIA-C3 indicates that the Grade by Program interaction is also significant. The results of the univariate analysis are in Table IIIA-C6 and show significant effects for Math Problem Solving and Unlikely Things. Examination of the means in Table IIIA-C2 suggests that the SWF program increases Math Problem Solving scores in Grade 5, while having the opposite impact in Grade 4. The SWF program seems to increase Unlikely Things scores in Grade 4 and decrease them in Grade 5. These findings indicate that the three-way analyses discussed above provide a better explanation of the results.

Turning to the main effects reported in Table IIIA-C3, it is not surprising that there is no main effect for Program. The complexity of the interactions previously reported would suggest that, and the means in Table IIIA-C2 present a mixed pattern.

On the other hand, Income main effects appear quite consistent. In the means table, if one looks down income levels (within a Grade and Program) for a given outcome, there is a strong tendency for HIgh Income students to have the highest scores, Medium Income students the next highest, and Low Income students the lowest. To the extent that this is not true, it reflects the interaction effects discussed above. This result reflects much research which has related cognitive outcomes to socioeconomic status. (See Table IIIA-C7 for univariate data.) It says nothing about inherent student capacity but provides a small bit of additional evidence about the relationship between the complex of variables mixed up in socioeconomic status and school performance

Grade differences are also significant, as one would expect on cognitive variables, for everything except Unlikely Things (see Table IIIA-C8, with Grade 5 students tending to score higher, regardless of Program or Income.

To sum up, it appears that High and Medium Income school students do better on ITBS outcomes in SWF schools and Low Income students do better on ITBS outcomes in Comparison schools. At the Grade 4 level, High Income students do better on the TTCT in Comparison schools, while Medium and Low Income students do better in SWF schools.

Table IIIA-C1

Distribution of Students and Classes for Cognitive Outcomes
by Grade, Income, and Staff Participation in the SWF Program

Year 1

Individual Level Analyses

Income	Grade 4		Grade 5	
	SWF	Comp*	SWF	Comp*
High **	102	71	29	81
Medium	80	68	105	59
Low	23	41	64	52

Class Level Analyses

Income	Grade 4		Grade 5	
	SWF	Comp*	SWF	Comp*
High	5	4	2	4
Medium	3	3	4	3
Low	1	3	3	3

*Comparison class students. Teachers of those classes did not participate in SWF training, and the faculty of the school did not participate as a group in the training.

**Income splits: High = 0 to 39% of students eligible for subsidized lunch; Medium = 40 to 79%; Low = 80 to 100%.

Table IIIA-C2

Student Cognitive Outcome Mean Scores by Grade, Income, and Program
Year 1

Cognitive Outcomes	Income	Means			
		Grade 4		Grade 5	
		SWF	Comp	SWF	Comp
Reading (ITBS)	High	4.45a	4.12	5.77	5.06
	Medium	3.83	3.49	3.79	* 3.87
	Low	3.02	3.34	3.65	3.95
	Unweighted Mean	3.77	3.65	4.40	4.29
References (ITBS)	High	4.31	4.11	6.04	5.06
	Medium	3.78	3.54	4.59	4.03
	Low	2.55	3.64	3.75	4.18
	Unweighted Mean	3.55	3.76	4.79	4.42
Math Problem Solving (ITBS)	High	4.38	* 4.32	5.79	5.19
	Medium	3.67	* 3.77	4.60	3.86
	Low	2.41	3.67	3.60	4.21
	Unweighted Mean	3.49	3.92	4.66	4.42
Fluency (TTCT)	High	19.87	23.35	28.69	27.17
	Medium	26.34	18.96	22.00	23.97
	Low	15.09	12.61	21.72	21.29
	Unweighted Mean	20.43	18.31	24.14	* 24.14
Flexibility (TTCT)	High	10.89	11.66	14.24	12.38
	Medium	11.74	9.53	10.69	11.36
	Low	8.48	6.98	9.89	* 9.98
	Unweighted Mean	10.37	9.39	11.61	11.24
Originality (TTCT)	High	19.60	26.44	28.00	29.67
	Medium	31.35	19.88	25.72	28.24
	Low	19.00	15.63	28.64	24.60
	Unweighted Mean	23.32	20.65	27.45	* 27.50
Unlikely Things	High	31.55	30.52	32.83	* 32.83
	Medium	29.95	26.49	27.79	29.05
	Low	25.48	27.66	27.95	27.69
	Unweighted Mean	28.99	28.22	29.52	29.86

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[a] Underlined score is apparently higher than the score in the other program.

*Scores for SWF and Comp are, or almost are, identical.

Table IIIA-C3

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income and Program

Year 1

Individual Level Analysis

Source	F[a]	p
Grade	15.11	.001
Income (High X Medium + Low)[b]	29.46	.001
(Medium X Low)	6.42	.001
Program	.95	.466
Grade X Program	5.90	.001
Income X Program		
(High X Medium + Low)	4.43	.001
(Medium X Low)	5.76	.001
Grade X Income X Program		
(High X Medium + Low)	2.49	.016
(Medium X Low)	4.08	.001

[a] Degrees of freedom = 7,757

[b] High Income contrasted with Medium and Low Income combined.

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income and Program

Year 1

Class Level Analysis

Source	F[a]	p
Grade	3.39	.015
Income (High X Medium + Low)	6.85	.001
(Medium X Low)	1.25	.322
Program	.61	.742
Grade X Program	2.94	.028
Income X Program		
(High X Medium + Low)	1.16	.367
(Medium X Low)	3.22	.019
Grade X Income X Program		
(High X Medium + Low)	1.30	.303
(Medium X Low)	.53	.799

[a] Degrees of freedom = 7,20

Table IIIA-C4

ANOVA for Student Cognitive Outcomes for Three-Way Interaction of Grade, Income, and Program
Year 1

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	2.37	.124	.83	.363
References	.67	.414	.01	.929
Math Problem Solving	.31	.577	1.64	.200
Fluency	7.38	.007	2.88	.090
Flexibility	9.12	.003	.73	.393
Originality	5.23	.023	5.13	.024
Unlikely Things	.40	.528	11.65	.001

[a] Degrees of freedom = 1,763

Table IIIA-C5

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income and Program
Year 1

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	3.31	.069	2.52	.113
References	3.72	.054	20.14	.001
Math Problem Solving	1.93	.164	21.66	.001
Fluency	4.97	.026	.02	.892
Flexibility	.78	.378	.00	.989
Originality	11.19	.001	.05	.830
Unlikely Things	.01	.926	1.70	.193

[a] Degrees of freedom = 1,763

Table IIIA-C6

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Grade and Program
Year 1

Cognitive Outcomes	F[a]	p
Reading	2.47	.117
References	2.29	.131
Math Problem Solving	4.98	.026
Fluency	2.49	.115
Flexibility	1.36	.245
Originality	1.32	.251
Unlikely Things	5.90	.016

[a] Degrees of freedom = 1,763

Table IIIA-C7

ANOVA for Student Cognitive Outcomes for Main Effects of Income
Year 1

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	124.57	.001	3.29	.071
References	90.48	.001	14.24	.001
Math Problem Solving	99.38	.001	16.61	.001
Fluency	9.59	.003	13.10	.001
Flexibility	23.79	.001	14.66	.001
Originality	.27	.006	4.04	.045
Unlikely Things	73.91	.001	2.25	.134

[a] Degrees of freedom = 1,763

Table IIIA-C8

ANOVA for Student Cognitive Outcomes for Main Effects of Grade
Year 1

Cognitive Outcomes	F^a	p
Reading	34.43	.001
References	91.79	.001
Math Problem Solving	66.86	.001
Fluency	11.92	.001
Flexibility	8.99	.003
Originality	7.47	.007
Unlikely Things	2.97	.085

[a] Degrees of freedom = 1,763

b. Data on Affective/Social Outcomes

The set of students on whom complete affective and social data were available is slightly different from and smaller than that for the cognitive data. The distribution of students is shown in Table IIIA-A1. (Tables are given at the end of section b.) The cell in the design for Grade 4 Low Income SWF is empty. As a consequence, analyses depend on interactions involving the empty cell will not be reported. All other cells contain students from two or more classes.

The measures included in this analysis are Sense of Competence as a Learner (SOCL), Pupil Opinion Questionnaire (POQ), Intellectual Achievement Responsibility (IAR), Giving Help, and Getting Help. (For a discussion of these measures, see section 111.A.3. of this report.) Means for these measures for groups in the Grade by Income by Program factorial design are shown in Table IIIA-A2.

Inspection of the means suggests that students in SWF schools are more likely to have higher affective and social outcomes than students in Comparison schools. This seems especially true for Grade 5 High Income students.

In Table IIIA-A3, the results for the MANOVA from the individual level and from the class level analyses are presented. The empty cell for Grade 4, Low Income, SWF students made comparisons involving low income uncertain. They are omitted from the table and from discussion. The data in the tables are parallel. If one requires the .01 level for significance on the individual level and .05 for the class level, then findings which are significant are the same for both tables.

The data in Table IIIA-A3 show that there is not a significant three-way (Grade by Income by Program) interaction. The interaction of Income by Program is not significant. The Grade by Program interaction does not quite attain significance at the .05 level.

Program differences, as a main effect, are significant. The univariate results are presented in Table IIIA-A4. The differences are significant for POQ, IAR, and Getting Help. They are nearly significant for Giving Help. Examination of the SOCL means in Table IIIA-A2 suggests that SWF students have higher outcomes in four of five available comparisons, so the trend on that variable may be the same; however, significance is not attained.

Income also has significant main effects. The univariate data are provided in Table IIIA-A5. High Income school students score significantly higher on the POQ and the IAR than do Medium Income school students. Examination of the means reflects these findings.

To summarize the affective/social data, students in SWF schools score higher than students in Comparison schools, clearly on the POQ, IAR, and Getting Help. High Income school students score higher than Medium Income school students, clearly on the POQ and the IAR.

Table IIIA-A1

Distribution of Students and Classes for Affective/Social Outcomes by Grade, Income, and Staff Participation in the SWF Program

Year 1

Individual Level Analyses

Income	Grade 4		Grade 5	
	SWF	Comp*	SWF	Comp*
High	97	71	28	81
Medium	73	62	102	55
Low	0	39	63	33

Class Level Analyses

Income	Grade 4		Grade 5	
	SWF	Comp*	SWF	Comp*
High	5	4	2	4
Medium	3	3	4	3
Low	0	3	3	2

*Comparison class students. Teachers of those classes did not participate in SWF training, and the faculty of the school did not participate as a group in the training.

Table IIIA-A2

Student Affective/Social Outcome Mean Scores by Grade, Income, and Program
Year 1

Affective/Social Outcomes	Income	Means			
		Grade 4		Grade 5	
		SWF	Comp	SWF	Comp
Sense of Competence as a Learner (SOCL)	High	61.90	61.46	63.11	60.20
	Medium	60.79	60.02	60.61	62.02
	Low	-	58.21	60.19	59.30
	Unweighted Mean	61.35	59.90	61.30	60.51
Pupil Opinion Questionnaire (POQ)	High	30.40	29.07	30.68	25.69
	Medium	25.04	25.77	26.02	25.00
	Low	-	25.69	29.86	26.73
	Unweighted Mean	27.72	26.85	28.85	25.86
Intellectual Achievement Responsibility (IAR)	High	19.06	18.58	19.64	18.20
	Medium	18.32	17.18	18.36	17.62
	Low	-	18.18	18.05	17.33
	Unweighted Mean	18.69	17.98	18.68	17.72
Giving Help	High	1.99	1.93	2.10	1.89
	Medium	2.09	1.96	1.96	1.93
	Low	-	1.97	2.04	2.09
	Unweighted Mean	2.04	1.95	2.03	1.97
Getting Help	High	2.08	2.02	2.13	1.91
	Medium	2.11	2.03	2.03	1.91
	Low	-	2.04	2.15	1.96
	Unweighted Mean	2.10	2.03	2.10	1.93

Table IIIA-A3

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income* and Program
Year 1
Individual Level Analysis

Source	F[a]	p
Grade	1.47	.196
Income (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	8.53	.001
Program	6.10	.001
Grade X Program	2.12	.062
Income X Program (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	1.82	.108
Grade X Income X Program (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	1.11	.352

[a] Degrees of freedom = 5,689

*Empty cell in Grade 4, Low Income, SWF.

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income* and Program
Year 1
Class Level Analysis

Source	F[a]	p
Grade	.31	.903
Income (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	2.62	.054
Program	3.89	.012
Grade X Program	.63	.679
Income X Program (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	1.00	.442
Grade X Income X Program (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	1.38	.272

[a] Degrees of freedom = 5,21.

*Empty cell in Grade 4, Low Income, SWF.

Table IIIA-A4

ANOVA for Student Affective/Social Outcomes for Main Effects of Program Year 1

Affective/Social Outcomes	F^a	p
SOCL	2.62	.106
POQ	16.34	.001
IAR	9.09	.003
Giving Help	3.16	.076
Getting Help	11.93	.001

[a] Degrees of freedom = 1,693

Table IIIA-A5

ANOVA for Student Affective/Social Outcomes for Main Effects of Income Year 1

Affective/Social Outcomes	High X Medium ~~+ Low~~ Income		Medium X Low Income	
	F^a	p	F^a	p
SOCL	2.15	.143		
POQ	36.92	.001		
IAR	10.11	.002	EMPTY CELL	
Giving Help	.20	.653		
Getting Help	.04	.848		

[a] Degrees of freedom = 1,693

c. Summary on Question 1, Year 1

The complexity of the multivariate analysis becomes especially evident at the point of summarizing, The results suggest that, in general, students are likely to score higher on affective/social outcomes in SWF schools than in Comparison schools. While there is a similar trend regarding cognitive data, the results are much more mixed.

High and Medium Income school students do better on ITBS outcomes in SWF schools and Low Income students do better on ITBS outcomes in Comparison schools. At the Grade 4 level, High Income school students do better on the TTCT in Comparison schools, while Medium and Low Income school students do better in SWF schools.

Students in SWF schools score higher than students in Comparison schools on POQ, IAR, and Getting Help. High Income school students score higher than Medium Income school students on the POQ and the IAR.

Thus, it is probably desirable for students to be in schools in which the staff has participated in the SWF training program. The fact that there are variations by Income, Grade, and outcome measure indicates that teachers and administrators may want to explore applications of the program to determine which have greater or lesser impact for them.

B. Year 2

1. Objectives

For the second year the basic questions being asked remained the same. The main change was in the design of the study.

2. Design

In the second year, it was possible to obtain data at the beginning of the school year and thus to provide better controls for any differences among classes. The study design is shown in Table III-B-1 below, and was pre-post measures, experimental-comparison groups.

Table III-B-1

Basic Design for SWF Program Participation Analysis, 1975-76

Grade	Pretest Data Collection October, 1975	Experience	Posttest Data Collection April, 1976	Approximate Number of Students
5	X	SWF	X	320
	X	Comparison	X	112
6	X	SWF	X	255
	X	Comparison	X	159

In the second year, the analysis design was structured differently to examine the effects of sex differences. A four-factor design was established with Sex, Grade, Income, and Program as the factors. However, it was found that Sex very seldom was involved in the interactions. It often had a main effect, but did not seem to influence the effects of the other variables. Several checks were run to determine whether differential distributions of boys and girls had any impact on the effects of other variables. These checks produced negative results. Therefore, the presentation of results will follow the format for Year 1 in examining the effects of the other factors, Grade, Income, and Program.

The analyses were again done with Finn's Multivariance program. (See Finn, 1976.) The analyses were done separately for the six cognitive outcomes and for the five affective/social outcomes. The data entered into the multivariance analyses were residual scores based on the pretest and posttest scores for each student. For a discussion of the considerations regarding use of residuals and their computation, see Section III.B.3. Measures below.

As for the first year, data for Year 2 were analyzed twice; once using the individual student as the unit of analysis, and once using the class as the unit of analysis. Generally, the discussion is based on the individual unit analysis with major differences from the class level analysis being noted.

3. Measures

a. Cognitive Measures

In the second year, six cognitive outcomes (ITBS References, ITBS Math Problem Solving, TTCT Fluency, TTCT Flexibility, TTCT Originality, and Unlikely Things) were measured. Because of the high correlation between ITBS Reading and the other ITBS measures, Reading was dropped. The reduction in data collection time was also of importance.

b. Affective/Social Measures

The same five affective/social outcomes were measured: Sense of Competence as a Learner (SOCL), Pupil Opinion Questionnaire (POQ), Intellectual Achievement Responsibility (IAR), Giving Help, and Getting Help.

c. Computation of Scores for Analysis

Because both pretest and posttest data were collected, it was possible to consider change or gain as the outcome in Year 2, as contrasted with simply using posttest scores as had been done in Year 1. The issues of measuring gain or change deserve some consideration here.

Arguments among statisticians around whether change can or should be measured continue. See, for example, Cronbach and Furby (1970), Harris (1963), Hummel-Rossi and Weinberg (1975), Linn and Slinde (1977), Lord (1960), Nunnally (1975), O'Connor (1972), and Richards (1975). Nunnally (1975) is relatively adamant in his position that analysis of change is not really desirable or appropriate. Lord proposes ways of adjusting computations to obtain "true" gain scores. Richards, reporting a simulation study, concludes that raw gain scores--the difference between pretest and posttest--may be the most appropriate for comparing educational programs.

Among the considerations resulting in the decision to go with residuals were the following:

1. The basic analytic design is a three-factor multivariate analysis of variance. This design does not admit covariance for each outcome on the basis of pretest scores on that outcome. Nunnally's approach also appears impossible to use in a multivariate context. Given eleven outcomes and about ten independent variables, the time and digestability requirements were considered too large to engage in separate analyses for each outcome, as Nunnally's method would seem to require.

2. Raw gain scores do not give any consideration to pretest differences among groups. While nearly all the statisticians agree that completely satisfactory adjustments are not possible, most seem to believe that raw gain scores are less satisfactory. Richard's data challenges this. However, the existence of some pretest differences in the data for this project encouraged a decision not to use raw scores.

3. Lord recommended special computations to include considerations of measurement reliability. His recommendations require test-retest data in the population of the study, and such data were not obtained.

Therefore, it was decided to use standardized residual scores. These were computed for each student for outcome variable based on the pretest and posttest scores of the 846 students involved in the analysis. These data were used in the analysis.

4. Sample

In accordance with the over-all plan for the research, the classes to be included in the second year of study came from Grade 5 and Grade 6. The intent was to increase the likelihood of obtaining data in the second year from students and classes which had that much more involvement in the program.

The experience of the first year suggested that it would be desirable to increase the probability of more classes in which there would be a high level of the SWF program characteristics being implemented. In order to pursue this objective, the proportion of classes from SWF schools was increased and several classes which were believed to be high in SWF characteristics were identified even though they did not meet the training criteria and were not included in the analyses of the first question. Thus, there were three groups sampled, each of which will be discussed below.

a. Considerations in Selecting SWF Classes

(1) Participation in Training

Classes were identified on the basis of being in schools in which the staff had participated in at least two of the Educator Training Center (ETC) courses and on the basis that the teacher of the class had participated in at least that many courses.

(2) Socioeconomic Distribution

As in the first year, classes were selected to represent an array of socioeconomic levels. The data available was on the proportion of students who received free lunches. Classes were selected from three categories: 0 to 39%, 40 to 79%, and 80 to 100%. This produced a geographic distribution as well.

(3) Student Performance

The conclusion reached in the first year of the project was that IQ and academic performance was closely associated with socioeconomic data. Therefore, no special effort was made to check student performance data in making class selections.

(4) Willingness of Principals

At the very beginning of school, principals were approached to determine their willingness to have the study done in their school. In those schools in which the principals were willing, the staff was then approached. A more complete explanation of the approach to principals is provided in the description of the sample for the first year. See section III A 4 above.

(5) Willingness of Teachers

Research staff met with teachers in grades 5 and 6 (of classes meeting eligibility requirements outlined in (1) above) to explain in detail the goals and all the activities of the study. They were told that $40 would be provided for instructional purposes for their classroom upon completion of the spring data collection.

When those teachers indicated their willingness to participate, the rest of the faculty was approached. The general design of the study was explained and the expectation that they would complete a questionnaire (copies of which were provided) in the spring. It was stated that they would be paid $6.00 for completing the questionnaire and that they did not have to participate.

When agreement was obtained from the staffs of those schools, then the students were identified and plans for data collection made.

b. Considerations in Selecting Comparison Classes

(1) Non-participation in SWF Training

Schools were identified which had not had formal participation in the training activities provided by ETC staff. In those schools, teachers of grades 5 and 6 were checked to determine that they had not participated in such training.

(2) Socioeconomic Distribution

Consideration was given to the proportion of students receiving free lunches, and schools which met the criteria indicated in (1) were approached according to the need to obtain some distribution of schools in the categories utilized in selecting SWF schools.

(3) Willingness of Principals and Teachers

The willingness to participate was determined in the same fashion as used with SWF schools and in the first year. In all cases, people were told that the school board, in approving the project, had stipulated that principals and teachers were free to participate or not.

c. Considerations in Selecting Additional Classes

To increase the extent to which classes exhibiting many of the characteristics of the SWF program would be included, principals who had participated in the SWF training but whose schools had not participated were approached. They were asked if they had staff members who were doing many of the things which reflected the SWF program. If the principals identified such teachers, then the willingness of all parties was checked.

These classes were not included in the analyses for Question 1, for the obvious reason that that question tests the impact of participation in the training. They were included in analyses for Question 2 and Question 3, where the emphasis is on SWF program characteristics in operation.

d. Sample Characteristics

Data were collected in seven SWF schools, five comparison, and two other schools; from 40 classrooms (at some point during the year); and from approximately 1050 students. The distribution of schools, classes, and students included in the final analysis are shown in Table III-B-2.

The data finally available for use in the analysis was reduced for a number of reasons. One teacher changed from being a classroom teacher to having special teaching functions for particular subject matter. Another teacher left the system. Data were collected, for training purposes, in two special classrooms for the gifted and talented, but not used in the analyses. And some students were eliminated because of missing data.

Table III-B-2

Distribution of Schools, Classes, and Students Which Were Included in Analyses by Grade, Income, and Program

	Income	Grade 5		Grade 6	
		SWF	Comp	SWF	Comp
Schools	High	2	2	2	1
	Medium	2	2	4	2
	Low	2	1	3	1
Classes	High	3	2	2	2
	Medium	5	2	6	3
	Low	5	1	4	2
Students	High	73	42	46	50
	Medium	144	45	137	71
	Low	103	25	72	38

In order to insure that students had exposure to the program, the analyses were done with only those students who had both pretest and posttest data, that is, data collected in October and in late March and early April.

Students who had complete data on both pretest and posttest were included in the final analyses with this exception. If a student did not have adequate data for a score on either Giving Help or Getting Help, the class average was substituted. If data were missing on both, the student was dropped. As in Year 1, missing data up to 10% was adjusted by substitution of the class mean.

5. Data Collection

Data collectors were recruited and trained by project staff. They collected all data in the fall, except for ITBS measures on a very few students. Data had been collected for those students as part of the establishment of eligibility for Title I services.

In the spring, trained data collectors collected all student outcome data except those ITBS measures collected routinely by the School District using teachers. The data collections were typically completed in three sessions. An extensive effort was made to collect data from all students through make-ups.

6. Results

To determine the effects of sex differences, sex was entered as a fourth factor. In general, sex effects were found to be significant as main effects but that sex very seldom entered any of the interactions. Several analyses were made to determine whether sex effects could be masking otherwise significant effects or could be creating significant differences where none otherwise would be. For example, the means for both males and females were examined. In general, the contribution of each sex to the total for a given cell of the design was roughly similar. Therefore, it is believed that sex differences do not create misleading results nor influence interactions generally.

The results will be presented in the same general sequence as for Year 1. Cognitive results will be presented first; affective/social will follow. Data from the class level analysis will be discussed regarding MANOVA tables, and elsewhere as appropriate. The main discussion will be based on the data analyzed at the individual student level.

The distribution of students for analysis of Question 1 in Year 2 is provided in Table IIIB-3. As discussed above, the same students are included in both cognitive and affective/social analysis in the second year of the study. Therefore, only one table will be provided for each independent variable to report numbers of students.

Table IIIB-3

Distribution of Students and Classes by Grade, Income, and Staff Participation in the SWF Program Year 2

Income	Grade 5		Grade 6	
	SWF	Comp	SWF	Comp
Individual Level Analyses				
High	73	42	20	50
Medium	144	45	137	71
Low	37	25	36	38
Class Level Analyses				
High	3	2	1	2
Medium	5	2	6	3
Low	2	1	2	2

a. Data for Cognitive Outcomes

The three-factor design contains two cells with only one class. At the Grade 5 level, in the Low Income Comparison school cell is a single class. That class tended to be in the middle of the distribution of residual scores among the classes in its Grade and Income position on cognitive scores.

At the Grade 6 level, there is a single class in the High Income, SWF cell. This class is somewhat low on its residual scores for its Grade and Income set of classes, but not for its grade.

There is nothing to suggest that these classes are biased in some fashion which would invalidate their involvement in the analyses.

Mean scores for each of the cells for each of the variables are provided in Table IIIB-C1. (These scores are means of the residual scores generated for each student. See the discussion of residuals in section III B 3 c above. Persons interested in the regular scores for pretest and posttest are directed to Appendix A.) Table IIIB-C2 has the MANOVA results for both the individual level analysis and the class level analysis. The results of the two analyses are quite different, insofar as significance levels are concerned. At the individual level, only one interaction is *not* significant. At the class level, only the main effects of grade and income *are* significant.

It is interesting to note that the means suggest the similarity of the analyses. Table IIIB-C1, parts a and b provide the mean residual scores for both individual and class level analyses. The *apparently* (not tested) higher (of the two Programs) mean score is underlined. The patterns are quite similar for the cell means based on individual students and those based on the class. Thus, the class level is a more stringent test of the data. Users concerned with program decisions may wish to consider both sets of data.

The remainder of this section will discuss individual level results. Interaction will be examined first.

The three-way interaction based on the High Income contrast with Medium and Low combined will be considered first. Combining means to fit this analysis permits the conclusion that differences between SWF and Comparison school students in High Income schools appear to be greater than for students in Medium and Low Income schools combined. In Grade 5, students in SWF schools more often appear to have higher means. In Grade 6, students in Comparison schools more often appear to have higher cognitive outcome scores.

When the contrast is between Medium and Low Income levels in the three-way interaction, the significant effect occurs for Math Problem Solving only. Examination of the means in Table IIIB-C1 shows that the two Income levels are in the opposite direction in 8 of 12 cases. Medium Income school students in SWF schools have apparently higher outcomes in 9 of 12 cases, while Low Income Comparison school students have apparently higher outcomes in 9 of 12 cases. From this three-way interaction alone, it would be difficult to make clear conclusions about whether and where to implement the SWF program.

The Income by Program interaction univariate data are provided in Table IIIB-C4. Since Table IIIB-C2 reported that the High Income by Medium and Low Income combined was not significant, this discussion will concern the Medium by Low Income contrasts. The discussion in the previous paragraph is relevant. The impact of this interaction is significant for four of the six outcomes, and nearly so for a fifth. The means table data indicate that on nine of 12 comparisons, Medium Income students are better off on cognitive outcomes in SWF schools than in Comparison schools. At the same time, students in Low Income Comparison schools score higher on nine of 12 comparisons.

It is appropriate to consider the grade by program interaction next. Table IIIB-C5 provides the univariate results. The effects of this interaction are significant for the TTCT outcomes. The mean scores make this result clear with Grade 5 SWF students scoring higher than Comparison and Grade 6 Comparison school students scoring higher than SWF on the TTCT measures. The means table also indicates that Grade 5 SWF school students appear to have higher means on 11 of 18 comparisons, while Grade 6 Comparison school students appear to have higher means on 11 of 18 comparisons.

Program main effects will be considered next. The univariate results are provided in Table IIIB-C6, and they show that Math Problem Solving and Fluency are significantly affected. Examination of the means data indicate that SWF students had higher outcomes.

The data in Table IIIB-C2 show that Income main effects are also significant. In the contrast of High with Medium plus Low Income, differences are significant on References, Problem Solving, and Unlikely Things. Other examinations of the means data corroborate the finding that students in High Income schools tend to have higher cognitive outcome scores. In the contrast of Medium with Low, the effects are significant on References and Flexibility. Medium Income school students most often have higher scores.

The main effects of grade are shown in Table IIIB-C8. Effects are significant for References, Fluency, and Originality. Fifth grade students do better on References, Fluency, and Originality; Grade 6 students do better on Unlikely Things.

To sum up the results for cognitive outcomes, Grade 5 students in High and Medium Income schools are better off in SWF schools. Students in Grade 5 in Low Income schools have mixed results. Grade 6 students in Medium Income schools are better off in SWF schools. High and Low Income school students in Grade 6 seem to do better in Comparison schools.

Table IIIB-Cla

Student Cognitive Outcome Mean Residual Scores by Grade, Income, and Program Year 2 *

Cognitive Outcomes	Income	Means			
		Grade 5		Grade 6	
		SWF	Comp	SWF	Comp
References (ITBS)	High	.192	.116	-.005	.416
	Medium	-.137	.050	.071	-.049
	Low	-.235	-.014	-.301	-.025
	Unweighted Mean	-.060	.051	-.078	.114
Math Problem Solving (ITBS)	High	.188	-.062	-.079	.209
	Medium	-.087	-.000	.138	-.436
	Low	.216	.119	-.248	-.030
	Unweighted Mean	.106	.019	-.063	-.086
Fluency (TTCT)	High	.292	-.466	-.242	.082
	Medium	.246	.019	.033	-.097
	Low	.050	.018	-.332	.104
	Unweighted Mean	.196	-.143	-.180	.030
Flexibility (TTCT)	High	.217	-.457	-.185	.284
	Medium	.133	.009	.048	.058
	Low	-.029	-.032	-.202	-.145
	Unweighted Mean	.107	-.160	-.113	.065
Originality (TTCT)	High	.361	-.489	-.463	.122
	Medium	.304	.000	-.051	-.103
	Low	.143	.176	-.411	.169
	Unweighted Mean	.269	.104	-.308	.063
Unlikely Things	High	.068	.057	.278	.173
	Medium	-.034	-.080	.076	-.132
	Low	-.398	-.036	.050	.084
	Unweighted Mean	-.121	-.020	.135	.042

*Individual Level Analyses.

Table IIIB-C1b

Student Cognitive Outcome Class Mean Residual Scores by Grade, Income, and Program Year 2*

Cognitive Outcomes	Income	Means			
		Grade 5		Grade 6	
		SWF	Comp	SWF	Comp
References (ITBS)	High	.186	.128	-.004	.410
	Medium	-.136	.045	.077	-.062
	Low	-.234	-.014	-.287	-.081
	Unweighted Mean	-.061	.053	-.071	.089
Math Problem Solving (ITBS)	High	.187	-.070	-.078	-.212
	Medium	-.087	-.011	.145	-.442
	Low	.221	.119	-.248	-.134
	Unweighted Mean	.107	.013	-.060	-.263
Fluency (TTCT)	High	.271	-.461	-.241	.074
	Medium	.240	.016	.049	-.088
	Low	.054	.018	-.360	.114
	Unweighted Mean	.188	-.142	-.184	.033
Flexibility (TTCT)	High	.207	-.455	-.184	.280
	Medium	.127	.002	.050	.060
	Low	-.024	-.032	-.219	-.153
	Unweighted Mean	.103	-.162	-.118	.062
Originality (TTCT)	High	.338	-.482	-.463	.110
	Medium	.299	-.009	-.037	-.095
	Low	.150	.176	-.443	.153
	Unweighted Mean	.262	-.105	-.314	.056
Unlikely Things	High	.076	.037	.277	.167
	Medium	-.033	-.084	.089	-.129
	Low	-.399	-.036	.063	.073
		-.119	-.028	.143	.037

*Class Level Analysis.

Table IIIB-C2

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and Program
Year 2
Individual Level Analysis

Source	F[a]	p
Grade	5.88	.001
Income (High X Medium + Low)	7.34	.001
(Medium X Low)	3.05	.006
Program	4.18	.001
Grade X Program	5.17	.001
Income X Program		
(High X Medium + Low)	.64	.702
(Medium X Low)	4.21	.001
Grade X Income X Program		
(High X Medium + Low)	6.80	.001
(Medium X Low)	3.97	.001

[a] Degrees of freedom = 6,689

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and Program
Year 2
Class Level Analysis

Source	F[a]	p
Grade	3.71	.020
Income (High X Medium + Low)	3.34	.029
(Medium X Low)	2.09	.120
Program	2.42	.081
Grade X Program	1.66	.202
Income X Program		
(High X Medium + Low)	.21	.969
(Medium X Low)	1.92	.147
Grade X Income X Program		
(High X Medium + Low)	2.42	.081
(Medium X Low)	1.34	.304

[a] Degrees of freedom = 6,14

Table IIIB-C3

ANOVA for Student Cognitive Outcomes for Three-Way Interaction of Grade, Income, and Program
Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
References	10.28	.002	3.26	.071
Math Problem Solving	20.41	.001	18.90	.001
Fluency	10.58	.001	1.28	.258
Flexibility	11.87	.001	.06	.301
Originality	13.40	.001	.70	.402
Unlikely Things	.07	.794	.73	.395

[a] Degrees of freedom = 1,694

Table IIIB-C4

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income and Program
Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
References	NOT SIGNIFICANT		3.71	.054
Math Problem Solving			7.86	.005
Fluency			7.25	.007
Flexibility			.17	.683
Originality			8.66	.003
Unlikely Things			3.96	.047

[a] Degrees of freedom = 1,694

Table IIIB-C5

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Grade and Program
Year 2

Cognitive Outcomes	F^a	p
References	.27	.600
Math Problem Solving	3.53	.061
Fluency	16.84	.001
Flexibility	10.81	.001
Originality	25.46	.001
Unlikely Things	1.02	.312

[a] Degrees of freedom = 1,694

Table IIIB-C6

ANOVA for Student Cognitive Outcomes for Main Effects of Program
Year 2

Cognitive Outcomes	F^a	p
References	3.33	.069
Math Problem Solving	10.24	.002
Fluency	5.05	.025
Flexibility	1.48	.223
Originality	1.95	.163
Unlikely Things	.41	.521

[a] Degrees of freedom = 1,694

Table IIIB-C7

ANOVA for Student Cognitive Outcomes for Main Effects of Income Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
References	31.96	.001	6.43	.012
Math Problem Solving	11.99	.001	2.53	.112
Fluency	.36	.547	2.04	.153
Flexibility	.22	.638	4.74	.030
Originality	.71	.400	.30	.581
Unlikely Things	5.63	.018	.40	.528

[a] Degrees of freedom = 1,694

Table IIIB-C8

ANOVA for Student Cognitive Outcomes for Main Effects of Grade Year 2

Cognitive Outcomes	F^a	p
References	4.38	.037
Math Problem Solving	.21	.645
Fluency	4.77	.029
Flexibility	.01	.911
Originality	13.12	.001
Unlikely Things	3.97	.047

[a] Degrees of freedom = 1,694

b. Data on Affective/Social Outcomes

The number of students whose data are in these analyses is shown in Table IIIB-1. (In Year 2, the same set of students is included in both cognitive and affective/social analyses.) Examination of the data for the single classes which comprise the sample in Grade 5 Low Income Comparison and in Grade 6 High Income SWF cells suggests no particular bias in their data. The first class tends to be on the low side at its grade level on the residuals, on these outcomes, but is not the lowest on any. The second class (Grade 6) tends to be in the middle of its grade on the residuals. Nothing in the data collection suggests a bias for these classes.

Mean scores for the cognitive/affective student outcomes (based on individual student data) for the cells in the three-factor design are provided in Table IIIB-A1. The results of the MANOVAs at both individual and class level analyses are presented in Table IIIB-A2. Some differences appear between the two levels. Of major importance are that Program effects are not significant in the class level analysis, and that one interaction is significant at the class level which was not at the individual level: Grade by Income (High by Medium plus Low) by Program. Examination of the means from the two levels of analysis suggest only minor changes. The differences in significance must result from differences in N's and/or differences in variance. Since the means do not change, the basic interpretations related to the individual level of analysis will be presented.

None of the three-way interactions is significant in the individual level analyses. The Income by Program interaction is significant for the High by Medium plus Low Income contrast. Table IIIB-A3 provides the univariate data. The interaction is significant on the POQ and on Giving Help. Additional work with the means in Table IIIB-A1 indicates that students in High Income, Comparison schools do better on the POQ and Giving Help, while Medium and Low Income School students generally do better in SWF schools. However, an examination of the means on the IAR indicate that students in SWF schools at all income levels for both Grade levels have higher IAR scores than do students in Comparison schools. The results for this analysis vary by outcome measures more than is often the case. On the other hand, an examination of the means in Table IIIB-A2 indicates that students in High Income schools have higher outcome scores 6 of 10 times (one for each grade for each outcome variable) if they are in Comparison schools, while both Medium and Low Income school students have higher outcomes in SWF schools on 7 of 10 comparisons. These data support the interaction analysis.

The Grade by Program interaction is also significant, with the POQ being significantly affected. See Table IIIB-A4. These data suggest that students in Grade 5 SWF schools tend to do better, while students in Grade 6 Comparison schools do better. However, the means in Table IIIB-A2 indicate that this tendency is not correct for the IAR, nor for Giving Help. The means do indicate that Grade 5 students appear to do better in SWF schools on 11 of the 15 comparisons.

All the factors have significant main effects. The univariate data for program main effects are provided in Table IIIB-A5. Results show a significant effect on the IAR. The means data support this clearly. It is also interesting to note that SWF means appear to be higher in 18 of 30 comparisons in Table IIIB-A1.

Income main effects are in Table IIIB-A6. The contrast which is significant is between Medium and Low Income. The effects are significant for the SOCL and the POQ. On the OSCL, 4 of 4 comparisons show Medium Income students score higher. On the POQ, Medium Income students score higher on 3 of 4 comparisons.

Grade level also has significant effects, as shown in Table IIIB-A3. The univariate data are in Table IIIB-A7. The data suggest that Grade 6 students score somewhat higher than Grade 5 students. However, examination of the means indicates that Grade 6 students appear to score higher on the SOCL (and this is supported by the univariate data), while Grade 5 students appear to score higher on the POQ and on Giving Help. Getting Help appears to present about equal scores. The Grade main effect is slender.

Over-all, students appear to do better on affective/social outcomes in the SWF program, clearly in the Fifth Grade. High Income students, however, appear to do better on six of 10 comparisons in the Comparison program. Class level analyses were not as positive regarding the effects of the SWF program.

Table IIIB-A1

Student Affective/Social Outcome Mean Residual Scores by Grade, Income, and Program
Year 2

Affective/ Social	Income	Means			
		Grade 5		Grade 6	
		SWF	Comp	SWF	Comp
SOCL	High	-.009	.171	.029	.154
	Medium	.006	-.118	.157	.131
	Low	-.267	-.496	-.138	-.099
	Unweighted Means	-.090	-.148	.016	.186
POQ	High	-.033	.005	.033	.218
	Medium	.154	-.176	-.170	.099
	Low	.204	-.332	.109	.024
	Unweighted Means	.108	-.168	-.009	.114
IAR	High	.069	-.260	.239	.165
	Medium	.004	-.119	.085	-.196
	Low	.084	-.245	.134	-.158
	Unweighted Means	.052	-.208	.152	-.063
Giving Help	High	-.107	.306	.152	-.021
	Medium	.075	-.031	-.041	-.081
	Low	-.013	-.194	-.008	-.126
	Unweighted Means	-.015	.027	.035	-.076
Getting Help	High	-.102	.050	-.157	.026
	Medium	.147	.084	-.066	.131
	Low	-.322	-.163	.026	.025
	Unweighted Means	-.092	-.010	-.066	.061

Table IIIB-A2

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and Program
Year 2
Individual Level Analysis

Source	F[a]	p
Grade	2.74	.018
Income (High X Medium + Low)	2.03	.073
(Medium X Low)	3.91	.002
Program	3.32	.006
Grade X Program	2.43	.034
Income X Program		
(High X Medium + Low)	2.30	.044
(Medium X Low)	.26	.934
Grade X Income X Program		
(High X Medium + Low)	1.75	.121
(Medium X Low)	.77	.573

[a] Degrees of freedom = 5,690

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and Program
Year 2
Class Level Analysis

Source	F[a]	p
Grade	2.05	.130
Income (High X Medium + Low)	4.48	.011
(Medium X Low)	2.78	.057
Program	1.85	.163
Grade X Program	.63	.680
Income X Program		
(High X Medium + Low)	4.15	.014
(Medium X Low)	.48	.788
Grade X Income X Program		
(High X Medium + Low)	3.53	.026
(Medium X Low)	.57	.721

[a] Degrees of freedom = 5,15

Table IIIB-A3

ANOVA for Student Affective/Social Outcomes for Three-Way Interaction by Income and Program

Year 2

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	1.60	.206		
POQ	6.63	.011		
IAR	.32	.570	NOT SIGNIFICANT	
Giving Help	4.34	.038		
Getting Help	.36	.551		

[a] Degrees of freedom = 1,694

Table IIIB-A4

ANOVA for Student Affective/Social Outcomes for Two-Way Interaction of Grade and Program

Year 2

Affective/Social Outcomes	F[a]	p
SOCL	.07	.792
POQ	8.13	.005
IAR	.07	.792
Giving Help	1.13	.288
Getting Help	.92	.338

[a] Degrees of freedom = 1,694

Table IIIB-A5

ANOVA for Student Affective/Social Outcomes for Main Effects of Program Year 2

Affective/Social Outcomes	F^a	p
SOCL	.07	.786
POQ	1.32	.250
IAR	12.10	.001
Giving Help	.03	.871
Getting Help	2.34	.127

^{a}Degrees of freedom = 1,694

Table IIIB-A6

ANOVA for Student Affective/Social Outcomes for Main Effects of Income Year 1

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
SOCL			13.72	.001
POQ			.94	.333
IAR	NOT SIGNIFICANT		.08	.776
Giving Help			.95	.331
Getting Help			4.84	.028

^{a}Degrees of freedom = 1,694

Table IIIB-A7

ANOVA for Student Affective/Social Outcomes for Main Effects of Grade Year 2

Affective/Social Outcomes	F^a	p
SOCL	7.11	.008
POQ	.49	.482
IAR	3.13	.078
Giving Help	.93	.336
Getting Help	.17	.683

[a] Degrees of freedom = 1,694

c. Summary for Question 1, Year 2

In general, students appear to benefit more if they are in schools in which members of the staff, including their teacher, have participated in the SWF training program.

On cognitive outcomes, High Income school students do better in SWF schools in Grade 5, but less well in Grade 6. Medium Income school students in both grades do better in SWF schools. Low Income school students tend to do better in Comparison schools, especially in Grade 6. There appears to be a Grade by Program interaction on the TTCT scores, with Grade 5 students doing better in SWF schools and Grade 6 students doing better in Comparison schools, especially students in High and Low Income schools.

On affective/social outcomes, Medium and Low Income school students in SWF schools have higher outcomes on the IAR and Giving Help. Students in those schools in Grade 5 generally seem to score higher. Other outcomes, especially in Grade 6, are more mixed.

Class level analyses provide fewer significant results.

C. Summary for Question 1

In both years, some of the analyses on cognitive outcomes suggest that the SWF program has a helpful effect. However, the mixed results in both years require one to say that there is not a consistent impact.

For the affective/social variables, the results are consistent in indicating the favorable impact of the SWF program. They are stronger in Year 1 than in Year 2.

Over-all, faculty participation in the SWF training program seems to have a constructive effect on student outcomes.

IV. ANALYSES REGARDING THE IMPACT OF SWF CLASSROOM CHARACTERISTICS

The research to be reported in this section was done to provide answers to the second question of this project. "Are student outcomes more favorable in classes which are high in SWF classroom characteristics than student outcomes in classes low on those characteristics, regardless of whether the class is participating in the program?"

The intent of this question is to determine whether the conditions in the classroom which are advocated by the program have an impact on student outcomes.

A. Year 1

1. Objectives

During the first year of the study, work on this question was intended to test the null hypothesis of no difference between outcomes for students in classes high on SWF characteristics and outcomes for students in classes low on those characteristics, taking into consideration grade and socioeconomic status.

2. Design

As described above for Question 1 (see section III.A.2), the design was a post only, high-low comparison, taking into consideration grade and socioeconomic status. A three-factor multivariate analysis of variance was the analytic approach. The assignment of classes to "high" or "low" was done for the various classroom variables according to the position of the class on the measures for that variable. The measures used and the scoring procedures are discussed below in Measurement.

In this first year, data were collected in classrooms in Grades 4 and 5. The three income levels (used as an indicator of socioeconomic level) were based on the proportion of students in the school who were eligible for subsidized lunches.

The analyses were done separately for cognitive and for affective/social outcomes to determine whether the program variables had different consequences for the two kinds of outcomes.

3. Measurement

In order to implement the study of Question 2, the following questions regarding classroom measurement had to be addressed:

(1) Can the SWF program be differentiated into several relatively independent classroom characteristics or dimensions that SWF experts would agree identify key parameters of the implemented SWF program in the classroom.

(2) Are valid and reliable measures of SWF variables possible? Can SWF behaviors and events be so clearly defined and specified that trained observers can agree in identifying them in the classroom?

(3) Will SWF experts agree that such behaviors represent SWF classroom phenomena?

(4) Can classrooms be reliably differentiated into those with a high amount and those with a low amount of SWF characteristics?

To answer these questions the developmental work concentrated upon (1) identifying, conceptualizing, defining in measurable terms classroom characteristics that were uniquely descriptive of an SWF implemented classroom, (2) developing appropriate measures of these classroom characteristics.

This work was done in the following sequential but overlapping stages.

a. Conceptualizing Five SWF Classroom Characteristics

Initial selection and definition of the five classroom dimensions was done by the research staff through surveying SWF documents; through informal discussions with SWF teachers, principals, and program coordinators; and through participation of the research staff members in SWF training seminars conducted by the Educator Training Center (ETC). Following initial conceptualization of the five dimensions, improvement in these concepts was sought through obtaining the consensus of SWF experts. People recruited for this task included principals and teachers with two or more years of SWF training and practice and ETC staff responsible for conducting SWF seminars with school personnel. In addition, ETC research and administrative staff participated.

The following section defines the five classroom dimensions selected for study.

(1) Involvement

The concept of involvement includes activities arising in interpersonal interactions which permit, promote, encourage and reinforce caring and helping behaviors. These are activities which reflect interest and concern of people for each other. In Glasser's view, involvement is probably primary among the factors which influence student outcomes.

It is important to differentiate this concept from the use of the term involvement when referring to being involved in a task or activity. Simply being actively engaged in a task is not considered as evidence of the concept. The key element of this SWF concept is interpersonal interaction around which there are caring and helping behaviors.

(2) Relevance

This concept relates to the conditions which assist the student in relating his learning experiences in school to his life outside of school. The student is able to see connections between school work and what occurs in his life outside of school. In this concept a key element is the experience of school as useful.

(3) Responsibility

In the Schools Without Failure philosophy, a major theme is that people who have problems in their lives and who feel unable to cope are individuals who believe that they do not influence events which occur in their lives and therefore deny responsibility for what is happening to them. Such individuals need experiences which help them to see the connection between their own actions (what they do) and the consequences of their actions. They need to develop a sense of ownership for their actions and the consequences which flow from them. In the school and classroom setting this requires the provision of conditions and learning activities which encourage students to make choices about learning goals, to plan and carry out learning activities, and to evaluate their actions and consequences. The key definitional term here is "ownership of one's behavior and the consequences of one's actions." Responsibility in this sense is different from the term responsibility referring to a student doing what he has been told to do, such as carrying out an assignment as instructed.

(4) Thinking

In the SWF philosophy, thinking and reasoning are considered to be primary prerequisites for people to be able to behave responsibly. The SWF educational approach emphasizes that learning activities should develop the capacities and skills of students for productive thinking. While some need for drill and memorization is recognized, the SWF approach holds that there is typically too much time invested in such activities.

To promote thinking in the classroom, conditions and activities which provide opportunity for cognitive processes such as reflection, inference, organizing, defining, evaluating, hypothesizing, integrating, and synthesizing, should be an integral part of the learning environment. Such activities are clearly promoted in inquiry and problem solving activities in the classroom.

(5) Success Orientation

The title of William Glasser's book, Schools Without Failure, emphasizes the importance attributed to conditions and activities in the classroom that promote student experience of and expectation of accomplishment. The thesis of the SWF philosophy is that the experience of failure only teaches failure, and that students regularly labeled failures come to see themselves in that way. The consequence of such school experiences is that students expect to fail and then behave in ways which limit or prevent accomplishment of school tasks.

In the classroom, the activities and conditions should be designed such that students perform successfully and attain learning goals. It is expected that student errors, mistakes, or setbacks will occur but that these are normal in the processes of learning.

A success orientation is evident when there are opportunities for students to revise their approaches to learning and to modify their objectives to attain success. It is recognized that different students perform differently. Therefore, there should be opportunities for different content, different levels of difficulty, different pacing, different sequences to provide a variety of avenues to success.

With these definitions established, it was possible to focus attention and effort on measurement of those classroom characteristics.

b. Selection and Development of Classroom Measures

In initial plans for this project, we had intended to measure classroom variables from the perspectives of the teachers, students, and trained observers. A number of investigators have urged such approaches (Brown, 1970; Ober et al., 1970; Wood, 1969). Our search for such measures did have some success. However, many of the tools did not provide information on the variables of this project and/or did not lend themselves to use in urban classrooms with students in grades 4 through 6. In addition, more time would be required of students and teachers, which would have made the demands of the study on those groups unacceptable.

(1) Observation Procedures

Consequently, classroom observation became the data collection procedure to be used. A number of observation procedures were obtained and examined. Among these were Amidon's Modified Flanders (1966a), Verbal Interaction Category System (VICS) (1966b), Ober's Reciprocal Category System (RCS) (1968), Medley's Personal Record of School Events (PROSE) (1968), Soar's Florida Climate Control System (FLACCS) (1971) and Brown's Teachers' Practices Observation Record (TPOR) (1967).

These measures, each designed to collect data for describing classrooms from different observational perspectives, fall into two observational system types: the category and the sign systems. These two types involve quite different observer behaviors.

The category procedure is concerned with verbal behaviors (usually) and the frequency with which various verbal categories of behaviors occur during a four or five minute oeriod of observing and coding. The observer must learn to identify different verbal behaviors (usually 10 to 20 verbal categories) and the numberical code for each. During a four or five minute time sample, the observer is required to code every three seconds the appropriate numerical code for each verbal statement that occurs in sequence. In actual practice, coding is sometimes more frequent than every three seconds because verbal statements often occur more frequently than that. However, the three second intervals for coding have been found the most optimum interval for obtaining verbal interaction (IA) data as they occur, so this time sequence is generally emphasized.

The sign procedure, in contrast to IA category systems, permits measures of non-verbal as well as verbal classroom behaviors and other indicators of classroom characteristics. Thus, it permits coding a wider range of behaviors and conditions than does IA and is used when classroom behaviors and conditions considered important in describing classrooms cannot be tapped by verbal IA behaviors alone.

The sign procedure typically requires the data collector to observe the classroom for two or three minutes without coding anything (unlike IA) and then to take a minute or two to indicate with a checkmark on a list of descriptions of behaviors, events, and conditions, those which had occurred or were present during the immediately preceding three minutes. The observer checks each item representing a given behavior or event he has observed only once no matter how many times the event actually occurred during the preceding three minute observational segment. The observer repeats this procedure during each of a number of three minute segments, usually a contiguous series, each segment interspersed with one or two minutes of checking the appropriate items on the checklist.

What is required of the observer using the sign procedure is complete familiarity with the definitions of the items contained in the sign checklist. The observer must be able to identify behaviors and events occurring in the classroom and to differentiate them in terms of the checklist items. Unlike the verbal category system, the observer is not required to learn codes as such, but the items in the checklist are abbreviated and the observer must be thoroughly familiar with the variety of behaviors and events which fall into the same category represented in a given item.

The sign procedure permits identification of the relative frequency of behaviors and events but does not approximate the actual frequency as the IA procedure is intended to do with verbal events.

Many different IA and sign instruments have been developed by researchers for collecting data to describe and analyze a variety of human interactive settings. In the following sections the two instruments used in the study of SWF classroom variables are described in detail in terms of their focus, content, and development.

(2) The Reciprocal Category System (RCS)

The search and examination of a variety of observational tools revealed the RCS which included verbal behavior categories that appeared appropriate to SWF dimensions. This tool was also being used to collect classroom data in a study of the SWF program in Pennsylvania (Masters, Laverty, and Hayes, 1975).

This system, developed by Robert Ober (1968), was based upon the work of Ned Flanders (1960), Withall (1949), Amidon (1966a) and others who have been working with the basic Flanders system of observation. The RCS differs from the original Flanders Interaction System, which focussed upon teacher verbal behaviors as the phenomena to be observed in the classroom. Of the nine verbal categories of the Flanders, only two were assigned to student talk.

In order to increase the capacity of the Flanders IA system for describing a broader spectrum of verbal behaviors and interactions in the classroom, Ober (1968) modified the original Flanders by expanding the focus and content to include student verbal behavior. This was not done by adding IA categories but rather by modifying somewhat the original nine Flanders categories, so that each category can be assigned to teacher and to student talk. A set of single digit numerical codes (1 to 9) identify the verbal category when the teacher is talking. A set of two digit numbers (11 to 19) identify the verbal behaviors when a student is speaking. There are two additional categories in the original RCS system. Category 10 is used to identify confusion/silence in the classroom while category 20 is coded when disorderly conduct occurs.

Our decision to use the RCS was influenced by these considerations: (1) it generated data relevant to the classroom variables as defined above; (2) it provided data on both teacher and student verbal behavior; (3) use of the system by others had resulted in a variety of measures being obtained and in computer programs for rapid analysis of extensive amounts of data; and (4) adequate reliability had been demonstrated in previous studies by many other researchers.

(a) Measures Obtained

During the training of observers for the RCS data collection, a number of ground rules relevant to SWF measurement needs were made. These were made by consensus of ICS research staff, Robert Soar (consultant in the training workshop) and the observers. Figure IV-1 provides definitions of the major verbal categories that comprise the RCS, and statements concerning the ground rules developed specific to the use of the RCS in the present study.

Scoring procedures developed for the RCS by other researchers are useful in meeting the measurement needs of the SWF classroom variables. Various RCS categories have been paired to create bipolar indices which help assess the SWF variables. For example, the pairing of Warms and Cools provides an indicator of the SWF variable, Involvement. Likewise, the categories Accepts-Corrects assess aspects of the SWF Success Orientation.

Figure IV-1

Verbal Category Descriptions of the Reciprocal Category System (RCS)

Code for Teachers	Category Definition	Code for Students
1	"WARMS" (INFORMALIZES) THE CLIMATE: Tends to open up and/or eliminate the tension of the situation; praises or encourages the action, behavior, comments, ideas, and/or contributions of another; jokes that release tension not at the expense of others; accepts and clarifies the feeling tone of another in a friendly manner (feelings may be positive or negative; predicting or recalling the feelings of another are included). [includes friendly happy laughter and giggling by pupils]	11
2	ACCEPTS: Accepts the action, behavior, comments, ideas, and/or contributions of another; positive reinforcement of these. [includes T recognizing P to permit him/her to speak when P initiates (holds up hand, for example), or when T indicates who speaks next in a P discussion ("gatekeep")]	12
3	AMPLIFIES THE CONTRIBUTIONS OF ANOTHER: Asks for clarification of, builds on, and/or develops the action, behavior, comments, ideas and/or contributions of another.	13
4	ELICITS: Asks a question or requests information about the content subject, or procedure being considered with the intent that another should answer (respond). [includes T assigning question to P by name, as "When did Columbus sail for America . . . Jim?"]	14
5	RESPONDS: Gives direct answer or response to questions or requests for information that are initiated by another; includes answers to one's own questions. [to indicate change in students but same category, insert 10 at end of each student, then repeat this code.]	15
6	INITIATES: Presents facts, information, and/or opinion concerning the content, subject, or procedures being considered that are self-initiated; expresses one's own ideas; lectures (includes rhetorical questions--not intended to be answered). [includes orienting information given by T preparatory to giving directions or questions. Transition to direction or question should be indicated by change in code to 7 or 4. Similarly, change from elaborating P idea to T idea is shown by change from 3 to 6.--4-6-4 To indicate change in students but same category, insert 10 at end of each student, then repeat this code.]	16

Figure IV-1 (continued)

Code for Teachers	Category Definitions	Code for Students
7	DIRECTS: Gives directions, instructions, order, and/or assignments to which another is expected to comply. [includes T use of P name as part of a direction.]	17
8	CORRECTS: Tells another that his answer or behavior is inappropriate or incorrect. [includes T use of P name as part of a correction. May stand alone, as when T says "Jimmy" to indicate that P is out of line.]	18
9	"COOLS" (FORMALIZED) THE CLIMATE: Makes statements intended to modify the behavior of another from an inappropriate to an appropriate pattern; may tend to create a certain amount of tension (i.e., bawling out someone, exercising authority in order to gain or maintain control of the situation, rejecting or criticizing the opinion or judgment of another). [includes derisive or mocking laughter by Ps.]	19
10*	SILENCE: Pauses, short periods of silence. [includes silence, busy task-involved noise, and the transition from one P to another without T intervention. Also means shift from one P to another within category.]	10
20*	CONFUSION: Disorderly conduct clearly evident. [Confusion which is disorder.]	20

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*10 and 20 -- coded only after 3 seconds. All other codes are recorded as soon as they begin.

1. Category numbers assigned to Teacher Talk when used in classroom situation.
2. Category numbers assigned to Student Talk when used in classroom situation.

A third RCS bi-polar score, Amplifies-Directs, appeared to measure some verbal components of SWF Responsibility, since Amplifies recognizes and reinforces student "ownership" of an idea or contribution; and Directs tends to limit student generation or initiation. In addition, the RCS categories of Elicit-Initiate of teacher talk seemed relevant to the measurement of Responsibility, since the former encouraged and the latter discouraged such student behavior. One other score, a ratio, is relevant to the measurement of Responsibility. Called Student Initiates, it is the ratio of the amount of student expression of ideas, opinions, and elaboration in relation to the amount of student predictable, narrow responses elicited by others.

Two other ratio scores developed for the RCS appeared to have potential for measuring parts of the SWF variable, Thinking. Teacher and Student Drill. The first provides a measure of the relative proportion of all teacher questions which elicit student expression of ideas, opinions, and viewpoints. The second score provides a measure of the relative amount of teacher questions which elicit narrow or predictable responses (e.g., drills).

With regard to the SWF variable, Relevance, none of the RCS categories or scores appeared to measure indicators of that concept.

Figure IV-2 below lists the RCS variables or scores which seemed appropriate as measures of SWF classroom characteristics.

(b) Reliability and Validity

Reliability is much more difficult to demonstrate for observational tools than it is for structured and standardized tests of achievement, aptitudes, and attitudes, i.e., student outcome variable. In part, this is due to the fact that no matter how well constructed and designed an observational tool may be for collecting data relevant to its purpose, the data collected can only be as adequate as the ability of the observer to use the tool appropriately. Thus, the observational tool cannot be considered apart from the skill of the data collector in using the tool.

Figure IV-2

RCS Variables Selected as Measures of SWF Classroom Dimensions

Involvement

Variable 1 = T Warms the environment
Variable 9 = T Cools the environment

Responsibility

Variable 3 = T amplifies
Variable 7 = T directs

Variable 4 = T questions
Variable 6 = T lectures

Variable 23 = Student initiates

Thinking

Variable 44 = T asks broad questions
Variable 73 = T and S drill

Success Orientation

Variable 2 = T accepts
Variable 8 = T corrects
Variable 21 = T acceptance vs. rejection

Although intra- and inter-observer consistency in coding a given phenomenon in the same way is a prerequisite for establishing the reliability of an observational tool, there are other sources of variance which contribute to that reliability. In the actual collection of classroom data, the stability of behavior and of situational factors may be significant sources of variance. That is, teachers and students may vary their behavior markedly from one period of observation to another because of home conditions, school-wide events, or changes in the composition of students in attendance. These latter sources of variance are not easily predicted or controlled.

The one source of variance which major effort can be made to control is observer variance, both intra and inter. Typically, the control is established through observer training. Previous research has shown that observer agreement with various forms of the Flanders' system has ranged from .75 to .95, using Scott's coefficient of agreement (Simon & Boyer, 1967).

In the present study, extended training was provided to obtain observer agreement. Observers were paired with each other and their codings compared for observations based on audio and video tapes and for films. The intent was to develop consensus among the observers about category definitions and coding.

Observer coding sheets were collected at the beginning, middle and end of the two week training period. Interobserver reliabilities were calculated using Flanders' (1960) modification of Scott's method for estimating reliability. This method included use of percentages rather than frequency of IA categories and permitted calculating estimates of reliability for several observers at the same time. Table IVA-1 shows estimates of reliability at three different points in time during the training period.

Table IVA-1

Observer Reliability for RCS Categories Using Flanders' Modification of Scott's Coefficient of Reliability*

Observer Number	Time 1	Time 2	Time 3
1	.81	.82	.71
2	.68	.71	.81
3	.75	.83	.91
4	.86	.81	.85
5	.78	.89	.90
6	.72	.72	.82
Average	.77	.79	.82

*Coefficient = $\frac{PO-PE}{100-PE}$

(3) Success School Classroom Description

To achieve the objectives necessary for the study of Question 2, the need for measures of a much broader range of behaviors than verbal interactions became evident as we began to specify in measurable terms those classroom characteristics defining each of the five SWF dimensions. Thus, in our search for measures we were guided by the need for (1) a procedure of sufficient breadth and scope to permit the collection of both verbal and nonverbal data which would provide appropriate description of SWF dimensions and (2) an instrument providing independent and reliable measures of each of these dimensions.

The instrument search that led to the selection of the RCS, a measure of SWF verbal characteristics, did not identify any classroom measure that met these more stringent criteria. Some of those instruments examined did include observational categories which appeared appropriate and several SSCD items are taken from such instruments. However, attempts to combine categories from different instruments produced only partial measures of SWF dimensions, yet at the same time seemed to maximize measurement problems. Any advantage of using an established instrument would be diminished considerably by using only parts of the instrument or by attempts to refine or modify category definitions to conform to SWF definitions.

On the basis of these considerations, we decided to develop a sign procedure specifically designed to measure within each of the five SWF variables. In the following section, we describe the process and the problems confronting the translation of SWF concepts into measurement.

(a) Defining Indicators of SWF Classroom Characteristics

The first task was to determine the specific behaviors, events, and conditions which would be appropriate indicators of each of the five classroom variables. Such specifications were needed to permit independent measurement of each variable. The measurement would eventually result in the classification of classes as high or low on each SWF variable, and on the five variables combined.

A problem which surfaced early was the need to differentiate the measurement of classroom variables (as "independent," "causal," variables) from student outcomes ("dependent" variables). That is, since classroom events and activities include student behaviors, it was necessary to select data for measuring classroom variables which would not be the same as that reflecting student outcomes.

For two classroom variables, Thinking and Responsibility, it was decided to collect data on behaviors or conditions expected to promote or facilitate such student outcomes rather than being indicators of such student behavior.

On the other hand, student outcomes did not include behaviors in Involvement, Relevance, or Success Orientation as those appear in the classroom. Therefore, student activities indicating those classroom variables could be part of the assessment of those variables.

Using the SWF literature, the input from teachers and others participating in the SWF training program, and the suggestions of the Educator Training Center (ETC) staff, a large number of teacher and student behaviors were identified. From this pool, those most accurately describing SWF variables were selected. These were scrutinized and revised to make them as clear and observable as possible. In addition, the indicators (of the SWF classroom variables) were checked to make the variables as independent of each other as possible.

A two-day conference was then held with two staff members of the ETC. Data collection plans for all sets of variables were reviewed. Several modifications in the measurement of classroom variables were made. Involvement, for example, was refined so that only behaviors reflecting interpersonal caring and concern among teachers and students were included as indicators. Relevance was further refined to include only those actions which specifically related classroom experience to individual student life outside the school setting.

The next stage of the development of the SSCD was to review the indicators developed to that point from the perspective of data collection in classrooms. Through the assistance of the ETC, a school system in which the SWF program had been implemented for several years was identified. Arrangements were made for us to visit the central office staff and four of the elementary schools. The research staff discussed the classroom indicators and solicited suggestions for others. In addition, the research staff visited classes and made judgments about the appropriateness of the indicators. Additional indicators were generated on the basis of information gathered in that school district.

In generating behavioral items through this process, both teacher and student behaviors had been specified as data sources for measuring SWF dimensions. However, the large number of items generated within each dimension led to the decision to reduce this number by focusing observation on teacher behaviors primarily. The rationale for this was based upon the assumptions that (1) in the SWF approach teacher behaviors and strategies are crucial to program implementation; and (2) if observers could focus their attention primarily upon the teacher's behavior, the task for them would be facilitated and inter-observer agreement would be enhanced. Thus, specific items describing student behaviors were eliminated. However, it was also decided to include, for each three minute segment, a check list of activity categories for both the teacher and students that would describe the context within which specific teacher behaviors describing SWF dimensions occurred.

The research staff then tested the indicators with videotape recordings of classroom activity. The indicators were further refined, and those which proved difficult to identify and code were eliminated. Following that step, Dr. Robert Soar, who provided consultation and training to the project on classroom observation, suggested additional improvements.

Final revisions were made during the training of the observers. Discussion among them, the research staff, and Soar increased the clarity of the indicators and promoted differentiation among them. The final form of the instrument, as used in Year 1, is described in the next section.

(b) Description of the SSCD

The SSCD format for Year 1 is a three-page checklist containing 151 items, 99 of which are organized into five checklists, one for each of the five SWF dimensions. Each list contains descriptions of behaviors and events which are believed to promote or inhibit the phenomena of that dimension of SWF classroom characteristics. The remaining 52 items are context descriptors indicating types of teacher and student activities, curriculum content, classroom organization (grouping), and climate (noisy, disruptive, quiet, etc.).

Each three-page checklist is designed for recording SSCD phenomena occurring during the three-minute observation. Space is provided to record the time at which each observation begins. The form also includes items to be completed at the end of the visit and inquires about teacher and observer over-all impressions of such things as the representativeness of the events and conditions of that visit and global judgments on SWF dimensions.

In using the SSCD, the data collector observes for three minutes without recording, then takes one to two minutes to mark on the checklist the behaviors, events, or conditions which were seen during the previous three minutes. The periods of observation and recording are repeated several times, then the observer used the RCS for a time, and then returned to use of the SSCD. In this way, a number of three-minute observations were obtained, scattered throughout the visit. These were combined to generate the SSCD scores for a given observation (visit).

With the SSCD, as with all sign procedures, it is the relative frequency of the occurrence of any given behavior that is the basis for measurement, rather than the absolute frequency which IA category systems (such as the RCS) attempt to approximate. Thus, in marking the SSCD, the observer checks an item of behavior once and only once if it occurred during the preceding three-minute period, regardless of how many times it had been observed. For the SSCD, the total number of checks for any given item on any one of the five dimensions checklists across all the three-minute samples, is the basis for deriving measures for each SWF dimension.

Figure IV-3 below presents examples of positive and negative SSCD items for each of the five dimensions.

Figure IV-3

Examples of SSCD Items Defining SWF Classroom Dimensions--Year 1

SWF Dimensions	Items
Involvement	+ Teacher expresses concern and caring
	+ Teacher encourages concern, help, support between students
	- Teacher rejects/ridicules on personal basis
	- Teacher critical of students working together
Relevance	+ Teacher introduces real life data into study
	+ Teacher uses students' interest and knowledge in explaining subject matter
	- Teacher drills, reviews, has students recite
	- Teacher emphasizes importance of present school work to future school work
Responsibility	+ Teacher encourages student generation of designs and plans for learning activities
	+ Teacher promotes/encourages student to decide how to carry out the learning plan
	- Teacher discourages student ideas for learning activities
	- Teacher disapproved of student ideas
Thinking	+ Teacher promotes open-ended thinking
	+ Teacher promotes/reinforces problem solving behaviors
	- Teacher promotes memorization
	- Teacher positively reinforces recall, acquisition of facts, etc.
Success Orientation	+ Teacher encourages/reassures students they can perform successfully
	+ Teacher provides time for student to perform successfully
	- Teacher identifies/reports individual failing or doing poor work.
	- Teacher unfavorably contrasts individual performance.

(c) Deriving SWF Scores from the SSCD

The final form of the SSCD for Year 1 consisted of 99 indicators which indicated or affected the presence of one of the five SWF variables. Each of these indicators was assigned a positive or negative numerical weight ranging from values of -3 to +3. The magnitude of the weights for any given indicator was determined by a panel of six educators selected because of their SWF training and experience. These panel members were first requested to rate each of the SWF items independently on the SSCD checklist. Following the independent ratings of each item, the panel of experts met together to clarify their ratings and to determine final SWF weights to be assigned. Where the panel members could not agree, items were eliminated.

An additional time weight was assigned to SSCD dimension scores. This weight was intended to reduce differences between classrooms in SSCD scores resulting from differing amounts of time observational data were collected.

Because each item of the SSCD was selected independently as behavior defining a classroom behavior representing an SWF classroom variable, the items comprising the SSCD are not scales. Thus, as shown below, the distribution of the 99 checklist items across the five dimensions is unequal.

Dimensions	N of items	+ SWF	- SWF
Involvement	26	15	11
Relevance	19	17	2
Responsibility	27	20	7
Thinking	12	9	3
Success Orientation	15	11	4

The scoring of the SSCD was done through a computer program designed to provide individual scores for each of the five variables. These scores were computed by the algebraic summing of weights for each variable item checked in a three-minute observation. Total scores for each dimension were computed by summing the three-minute subscores and multiplying the totals by the time weight appropriate to the number of three-minute observational segments in which data were collected. Total variable scores for each classroom were based on all observation data collected. These were computed by summing all three-minute subscores for each variable across the three classroom data collections and multiplying each of these sums by the time weight appropriate to the total number of three minute observations.

(d) Reliability and Validity of the SSCD

The reliability and validity of classroom data collection procedures were major considerations in the decision to develop the SSCD. The consensus of SWF principals, teachers, and ETC staff concerning the appropriateness of the items comprising each of the five dimensions provided a "face" validity. Additionally, having ETC trained and experienced SWF educators assign varying numerical positive and negative weights to items was done to enhance the validity of the SSCD as a measure of SWF classroom characteristics.

To increase reliability, the decision was made to make the work of the observers as reportorial and descriptive as possible. They were to record the occurrence of specific actions (the indicators). They were not asked to make judgments or inferences or interpretations. In training with audiotapes, videotapes, and films, their discussions indicated considerable agreement. Actual assessment of reliability presented considerable difficulty, primarily because of the infrequent occurrence of some SWF activity. There simply was not much evidence of certain indicators on those tape and film records.

As part of their training, the observers visited classrooms and practiced using the SSCD instrument. (The classrooms were not ones used in the study and none of the teachers had participated in the SWF training.) Again, the observers found almost no indication of some SWF classroom variables. Simple percentage agreements among observers ranged from 60 to 65 percent on SSCD indicator items. The data on which those estimates were computed were quite limited by the relative absence of SWF phenomena. Thus, although the indices of reliability obtained prior to data collection were not at the levels desired, the coding and discussions in training sessions suggested a higher level of reliability than was measured; the source of the problem seemed to be the limited occurrence of SWF indicators. It was expected that data collection in SWF classrooms would not present that problem. However, a consequence of the concern regarding reliability was the decision to analyze outcomes for only those classes on which there was adequate agreement among observers. This matter will be discussed below in the section on Results: Identifying SWF Classrooms.

4. Study Sample

The complete explanation of the process of selecting schools and classrooms is explained in section III.A.4. above. Thirty-eight classrooms were involved in the study. Since Question 2 is concerned with classroom variables and not with staff participation in training (which was the focus in Question 1), the important consideration in sampling was that there would be variation in the extent to which the classrooms provided SWF experiences for students. The selection of classes on the basis of teacher involvement in the program--those having it and those not--was expected to provide such variation.

For the distribution of classes by grade, income, and program, see Table IIIA-4.

5. Data Collection

Providing an adequate description of the learning situation requires more than good observation procedures and well-trained observers. Adequate sampling of the variety of activities and conditions is also important. Theoretically, data from each part of the school day is needed.

There is always the concern that having an observer in the classroom will produce unnatural activity. It was decided that having observers stay for more than an hour for each observation would reduce markedly any such effects.

In addition, there is the possibility that a given observer will influence a particular classroom in a way that the resulting data will be systematically distorted. Therefore, a different observer was scheduled for each of the observations in a given class.

Data collection was planned so that each classroom would be visited three times, each visit by a different data collector, and each visit at a different time of day. Information obtained from teachers indicated that such a plan was not workable. As a result of Title I programs, some students were regularly out of the classes at particular times. Some teachers had arrangements with other teachers to trade students for particular instructional purposes, which also removed students regularly from their home rooms. As a consequence, it was not possible to schedule observations at all times of the school day for each classroom. These same conditions produced student movement in and out of class, resulting also in reduced time available for observation, and made the identification of some SWF indicators more difficult. Of the 38 classrooms, 16 could be scheduled for observations across the whole school day.

In collecting data, observers were first to collect SSCD data for two three-minute segments, and then to intersperse one or two five-minute segments of the RCS with three or four three-minute segments of the SSCD. At the end of the visit to a classroom, the observer was to complete a brief description of the classroom, state his/her impression of the data collection, and obtain from the teacher his/her opinion regarding the degree to which the activities during the observation period were typical of that classroom.

Six observers (two men and four women) were employed as observers. All six had some experience in data collection and all but one had had some experience in classroom observation. None of them had had experience or training with systematic observation using IA or sign procedures such as were used in the present study.

These six observers were given training conducted by the ICS staff and an expert consultant for a two-week period immediately prior to the classroom data collection.

Classroom data were collected over a three-week period during the early spring of 1975 for Year 1 of the study. All thirty-eight of the classrooms in the study were visited at least three times. Four classrooms were visited for a fourth time because data were limited on a previous visit. One classroom was visited only twice because the teacher was not available during the time the third visit could be scheduled.

Data collectors used both the SSCD and the RCS in each of the classroom visits. They collected a total of 117 sets of data across the 38 classrooms. The average number of minutes of actual data collection over the three or four visits was 151 minutes or 2¼ hours per classroom. The average number of minutes of SSCD and RCS data collection were respectively 72 and 79 minutes per classroom.

All these data were transferred to punch cards and the analyses were done by computer.

6. Results

This section will consist of two parts: the first part deals with the identification of high and low SWF classrooms using observational data. The second part deals with the multivariate analyses of student outcome data in the three-factor design (Grade, Income, and Program).

a. Identification of Classrooms

The primary goal of the collection of data on SWF classroom characteristics was to differentiate classrooms as high or low on those characteristics. That differentiation would then permit examination of the impact on student outcomes. Since data were obtained on classroom characteristics from both the RCS and the SSCD, analyses were done for both sets of measures. The procedures followed in differentiating classrooms will be described for the RCS first, then for the SSCD.

The initial output provided scores for each variable for each observation. These data were examined to determine reliability, the extent to which different observers provided similar descriptions of a given classroom. As pointed out in the section on data collection, it was intended that data were to be collected by a different observer at a different time of day to permit as accurate a representation of learning experience in the classroom as possible. These arrangements, however, also tended to increase the variability among observations of a classroom.

That variability showed in the scores. Examination of the data showed a tendency for some observers to see more of the indicators than did others. Therefore, all the data for a given observer for a given variable across the classrooms visited by that observer were examined. These scores were classified, on the basis of the scores of that observer, as high, medium or low. With those designations it was then possible to locate which classrooms were seen as high, in the middle, or in the lower one-third of the distribution by all observers on each variable.

For those classrooms and those variables with score levels congruent across observations, data were combined and mean scores computed. Classrooms were then located as high and as low on a given variable by rank ordering mean scores from highest to lowest, splitting distribution in half with scores above and below the median designated respectively as high and low on the given variable.

(1) Identifying High and Low SWF Classrooms Using RCS Data

Identifying a classroom as high or low SWF on a given dimension involved examination of a pattern of high and low scores on those specific RCS variables selected as bi-polar measures of the dimensions. (See section IV.A.3. for description.)

Thus, for the SWF dimension, Involvement, classrooms whose mean scores on RCS variable 1 (Warms) and 9 (Cools) ranked high and low respectively in the rank ordering score distributions, were designated high SWF Involvement classrooms. Classrooms showing the reverse of this pattern, that is, low mean scores on variable 1 (Warms) and high mean scores on variable 9 (Cools) were designated low SWF Involvement classrooms. Other classrooms with scores either high or low on both variables 1 and 9 were eliminated from further analysis on this specific dimension.

Of the total number of 38 classrooms in the study for Year 1, 22 were located showing these high and low SWF Involvement score patterns on the RCS. Of these classrooms, 9 were identified as high, 13 as low SWF classrooms on the dimension Involvement. Table IVA-2 shows the distribution of these classrooms in terms of study variables.

Table IVA-2

Distribution of 22 Classrooms on Grade, Income, and SWF Involvement (as Measured by the RCS)

Income Level of Families Served by the School	4th Grade Involvement		5th Grade Involvement	
	High n classes	Low n classes	High n classes	Low n classes
High Income	3	3	2	3
Medium Income	1	1	1	2
Low Income	0	2	2	2
Total	4	6	5	7

Using the same procedure as that used in locating high and low SWF Involvement classrooms, classrooms were located as high and low SWF on Responsibility, Thinking, and Success Orientation. Some classrooms were dropped because they did not meet the criteria of agreement on score levels across the three data collections. As a consequence of this procedure, it was found that too few classrooms remained to pursue the analysis as designed for other dimensions than Involvement.

To maximize the possible utilization of the data, we examined all of the data for each of the classrooms, looking for evidence that a classroom tended to be high, in general, based on the evidence we had about that classroom. By examining scores on individual RCS categories (in contrast with the ratios or bi-polar scores) and the satisfactory dimension scores, it was possible to classify 33 classrooms as high or low on RCS indicators of an over-all SWF orientation. The available evidence permitted classes to be arrayed from high to low. They were split as near the middle as reasonable for the analysis. Table IVA-3 shows the distribution of classrooms on the over-all measure as obtained from the RCS.

Table IVA-3

Distribution of 33 Classrooms by Grade, Income, and SWF Over-all (as Measured by the RCS)

Income Level of Families Served by the School	4th Grade Overall RCS		5th Grade Overall RCS	
	High n classes	Low n classes	High n classes	Low n classes
High Income	3	3	4	1
Medium Income	2	3	1	6
Low Income	0	4	4	2
Total	5	10	9	9

(2) Identifying High and Low SWF Classrooms Using the SSCD

For each of the 38 classrooms, SSCD scores on each of the five dimensions were used to classify them as high or low on the dimension. The data from each observation were examined to determine the reliability across observers. As discussed above, only classrooms with satisfactory congruence were included.

For those classrooms with congruent scores on a given dimension, data were combined and mean scores were used. These scores were arrayed from highest to lowest, the distribution split into halves with classrooms then located as high or low SWF on the given dimension if their scores were respectively above or below the median score.

Of the 38 classrooms, 20 were identified as either high or low on the dimension Involvement. The scores on the other specific SWF dimensions did not differentiate a sufficient number of classrooms for the purpose of analyzing the relationship of each dimension to student outcomes. Table IVA-4 shows the distribution of the 20 classrooms in terms of Involvement.

Table IVA-4

Distribution of 21 Classrooms by Grade, Income, and SWF Involvement (as Measured by the SSCD)

Income Level of Families Served by Schools	4th Grade Involvement		5th Grade Involvement	
	High n classes	Low n classes	High n classes	Low n classes
High Income	4	4	2	3
Medium Income	2	3	1	2
~~Low Income~~	—	—	—	—
Total	6	7	3	5

An SSCD total or overall mean SWF score based upon combining data across the five dimensions was not feasible. This was because dimension scores were not based upon scaled items and individual dimensions scores were not comparable, i.e., a lower quantitative score on Success Orientation than on Involvement could not be interpreted to mean a higher amount of Involvement than Success Orientation. Comparison between classrooms was possible only within a given dimension.

Thus, to locate classrooms with differing amounts of SWF characteristics based upon all SSCD dimensions scores, classroom patterns of mean scores across the five dimensions were examined. The pattern of high and low scores on the five dimensions for each classroom was the basis for locating and differentiating classrooms into those with overall high SSCD scores and those with overall low SWF scores.

Table IVA-5 shows the distribution of the 23 classrooms which were differentiated into high and low overall SSCD classrooms on the basis of their patterns of high and low scores across the five SWF dimensions.

Table IVA-5

Distribution of ?3 Classrooms by Grade, Income, and SWF Over-all (as Measured by the SSCD)

Income Level of Families Served by School	4th Grade Overall SSCD High n classes	4th Grade Overall SSCD Low n classes	5th Grade Overall SSCD High n classes	5th Grade Overall SSCD Low n classes
High Income	3	2	2	2
Medium Income	1	2	0	3
Low Income	1	2	3	2
Total	5	6	5	7

b. Impact of Classroom Involvement

Glasser stated that involvement of the teacher with the student was the first step in the process of developing an effective learning environment. As discussed above in IV.A.3., this was measured in classrooms with two instruments by an observer. The data from the two instruments have been processed and used in the analysis separately. The results will be presented separately for each instrument.

(1) Data Regarding Classroom Involvement as Measured by the SSCD

As explained above, classes were identified which were high on Involvement as measured by the SSCD and which were low on that measure. Those classes upon which there was adequate agreement among observers were included in these analyses. There were not enough classes at the Low Income level meeting those criteria to permit analysis at that level. Therefore, these analyses were done with classes at High and Medium Income levels. The difference between the mean SSCD Involvement scores of the High group and Low group of classes was significant.

Scores of students were then allocated to the cells of the three-factor design, and the individual level analyses were conducted. Class means were allocated to the cells, and the class level analyses were conducted. To provide a short-hand way of saying "the SSCD measure of SWF classroom Involvement," the term SSCD Involvement will be used.

In the discussion of the MANOVA tables, differences between individual level and class level analyses will be identified. The remainder of the discussion will deal with individual analyses.

(a) Data on Cognitive Outcomes

The distributions of students and classes in the three-factor design are provided in Table IVA-SI-C1. There is one cell in which there is a single class, the Grade 5, Medium Income, SWF cell. This class tends to be near the middle of the distribution of scores for its grade and income set generally and for its grade for ITBS data. It is on the low side of its set and grade on the TTCT and Unlikely Things measures. There is no evidence of bias in the selection or data collection in this class.

The mean scores for the individual level analyses are shown in Table IVA-SI-C2.

The MANOVA data for the analyses at the individual student level and the class level are shown in Table IVA-SI-C3.

As that table shows, all the main effects and interactions are significant in the individual level analyses; only Grade and Income main effects are significant in the class level analyses.

The discussion of results will now focus on the individual student level of analysis. The three-way interaction of Grade, Income (High by Medium contrast), and SSCD Involvement is significant. The ANOVAs for the individual outcomes are in Table IVA-SI-C4. The effects of the interaction are significant for the TTCT measures (Fluency, Flexibility, and Originality) and for Unlikely Things. For each of those outcomes, the pattern of means is the same. Students in Grade 4 in both High and Medium Income schools have higher outcome scores in classrooms high in SSCD Involvement. In Grade 5, students in High Income schools have higher outcomes if they are in classes high in SSCD Involvement, but students in Medium Income schools in that grade have higher outcomes in classes low in SSCD Involvement.

Table IV-SI-C3 indicates a significant two-way interaction of Income and SSCD Involvement. Univariate results are in Table IVA-SI-C5. Effects are clearly significant for References, essentially significant (.053) for Math Problem Solving, and approaching significance (.077) for Reading. The means indicate that students in High Income schools have higher outcomes in High SSCD Involvement classes. This does not appear to be true for students in Medium Income schools.

The Grade by SSCD Involvement interaction is significant. Univariate data are in Table IVA-SI-C6. The effects are significant for the TTCT measures and for Unlikely Things. Students in Grade 4 in High Involvement classes have higher outcomes, while students in Grade 5 in Low Involvement classes have higher outcomes. However, the data for the students in Grade 5 seem to be the consequence, principally, of the difference between High and Lo-Involvement classes of students in Medium Income schools. For each of the four outcomes, those Medium Income school students in classes Low in Involvement have much higher scores.

The main effect of SSCD Involvement is significant for all outcome variables, as shown in Table IVA-SI-C7. However, examination of the means indicates that the explanations provided by the interactions are a more accurate representation of the results.

The MANOVA table indicated a significant main effect for Income. According to Table IVA-SI-C8, it is significant for the outcome variables, except Fluency and Flexibility. For the ITBS measures and Unlikely Things, students in High Income schools have higher scores, which fits much research on the relationship between cognitive outcomes and socio-economic status. On Originality, students in Medium Income schools appear to have higher outcomes in Grade 4 High SSCD Involvement classes and in Grade 5 Low SSCD Involvement classes.

As would be expected, students in Grade 5 generally have higher outcome scores than students in Grade 4. The univariate data are in Table IVA-SI-C9.

To summarize the cognitive results, students in Grade 4 usually have higher outcomes if they are in classes high in SSCD Involvement. In Grade 5, the outcomes are more mixed, with Medium Income school students in Low Involvement classes usually having the apparently higher mean. The over-all summation is that students are more likely to have higher cognitive outcomes in classes high in SSCD Involvement.

Table IVA-SI-CI

Distribution of Students and Classes for Cognitive Outcomes by Grade, Income, and SSCD Involvement
Year 1

Individual Level Analyses

Income	Grade 4		Grade 5	
	SSCD Involvement		SSCD Involvement	
	High	Low	High	Low
High	74	76	29	57
Medium	57	68	17	47
Low	None		None	

Class Level Analyses

Income	Grade 4		Grade 5	
	SSCD Involvement		SSCD Involvement	
	High	Low	High	Low
High	4	4	2	3
Medium	2	3	1	2
Low	None		None	

Table IVA-SI-C2

Student Cognitive Outcome Mean Scores by Grade, Income, and SSCD Involvement
Year 1

Cognitive Outcomes	Income	Means			
		Grade 4		Grade 5	
		High	Low	High	Low
Reading (ITBS)	High	4.62	4.06	5.77	4.84
	Medium	3.87	3.49	3.46	3.62
	-~~Low~~-				
	Unweighted Mean	4.25	3.78	4.62	4.23
References (ITBS)	High	4.56	3.92	6.04	4.94
	Medium	3.82	3.54	4.22	4.16
	-~~Low~~-				
	Unweighted Mean	4.19	3.73	5.13	4.55
Math Problem Solving (ITBS)	High	4.62	4.26	5.79	5.06
	Medium	3.68	3.77	4.29	4.18
	-~~Low~~-				
	Unweighted Mean	4.15	4.02	5.04	4.62
Fluency (TTCT)	High	21.09	19.20	28.69	26.49
	Medium	28.32	18.96	16.35	25.64
	-~~Low~~-				
	Unweighted Mean	24.71	19.08	22.52	26.07
Flexibility (TTCT)	High	11.92	10.11	14.24	11.74
	Medium	12.30	9.53	7.82	11.81
	-~~Low~~-				
	Unweighted Mean	12.11	9.82	11.03	11.78
Originality (TTCT)	High	21.36	19.84	28.00	27.32
	Medium	34.39	19.88	19.82	30.45
	-~~Low~~-				
	Unweighted Mean	27.88	19.86	23.91	28.89
Unlikely Things	High	31.46	30.51	32.83	32.19
	Medium	30.11	26.49	25.29	28.36
	-~~Low~~-				
	Unweighted Mean	30.79	28.50	29.06	30.28

Table IVA-SI-C3

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and SSCD Involvement

Year 1

Individual Level Analysis

Source	F[a]	p
Grade	9.23	.001
Income (High X Medium + ~~Low~~) ~~(Medium X Low)~~	16.11	.001
Program	3.90	.001
Grade X Program	2.90	.006
Income X Program (High X Medium + ~~Low~~) ~~(Medium X Low)~~	3.63	.001
Grade X Income X Program (High X Medium + ~~Low~~) ~~(Medium X Low)~~	2.49	.016

[a]Degrees of freedom = 7,411

Class Level Analysis

Source	F[a]	p
Grade	4.44	.034
Income (High X Medium + ~~Low~~) ~~(Medium X Low)~~	8.09	.007
Program	2.27	.151
Grade X Program	.41	.871
Income X Program (High X Medium + ~~Low~~) ~~(Medium X Low)~~	1.12	.442
Grade X Income X Program (High X Medium + ~~Low~~) ~~(Medium X Low)~~	.70	.675

[a]Degrees of freedom = 7,7

Table IVA-SI-C4

ANOVA for Student Cognitive Outcomes for Three-Way Interaction of Grade, Income, and SSCD Involvement

Year 1

Cognitive Outcomes	High X Medium ~~+-Low~~-Income		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	2.65	.104	NO LOW INCOME CLASSES	
References	1.65	.200		
Math Problem Solving	.09	.770		
Fluency	11.15	.001		
Flexibility	11.27	.001		
Originality	9.46	.002		
Unlikely Things	6.72	.010		

[a] Degrees of freedom = 1,417

Table IVA-SI-C5

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income by SSCD Involvement

Year 1

Cognitive Outcomes	High X Medium ~~+ Low~~ Income		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	3.14	.077	NO LOW INCOME CLASSES	
References	5.40	.021		
Math Problem Solving	3.76	.053		
Fluency	.38	.537		
Flexibility	1.71	.191		
Originality	2.27	.133		
Unlikely Things	.39	.534		

[a] Degrees of freedom = 1,417

Table IVA-SI-C6

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Grade by SSCD Involvement
Year 1

Cognitive Outcomes	F[a]	p
Reading	.08	.781
References	.91	.340
Math Problem Solving	1.59	.208
Fluency	6.50	.011
Flexibility	4.03	.045
Originality	7.69	.006
Unlikely Things	5.53	.019

[a] Degrees of freedom = 1,417

Table IVA-SI-C7

ANOVA for Student Cognitive Outcomes for Main Effects of SSCD Involvement
Year 1

Cognitive Outcomes	F[a]	p
Reading	15.24	.001
References	20.16	.001
Math Problem Solving	4.33	.038
Fluency	5.10	.025
Flexibility	9.14	.003
Originality	4.70	.031
Unlikely Things	4.79	.029

[a] Degrees of freedom = 1,417

Table IVA-SI-C8

ANOVA for Student Cognitive Outcomes for Main Effects of Income
Year 1

Cognitive Outcomes	High X Medium + ~~Low~~ Income		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	60.32	.001	NO LOW	
References	38.22	.001	INCOME	
Math Problem Solving	43.27	.001	CLASSES	
Fluency	.33	.564		
Flexibility	1.99	.159		
Originality	5.28	.022		
Unlikely Things	40.21	.001		

[a] Degrees of freedom = 1,417

Table IVA-SI-C9

ANOVA for Student Cognitive Outcomes for Main Effects of Grade
Year 1

Cognitive Outcomes	F[a]	p
Reading	14.99	.001
References	52.93	.001
Math Problem Solving	31.72	.001
Fluency	11.23	.001
Flexibility	4.72	.030
Originality	7.46	.007
Unlikely Things	1.71	.192

[a] Degrees of freedom = 1,417

(b) Data on Affective/Social Outcomes

The distribution of students and classes across the cells in the three-factor design is shown in Table IVA-SI-A1. There is one single-class cell in the analysis. It is in Grade 5 in Medium Income in High SSCD Involvement. The class is high in its set and in its grade on the POQ, IAR, Giving, and Getting Help. It is low on the SOCL. There is no evidence of bias in the selection or data collection for this class.

The mean scores for affective/social outcomes, based on the individual student analyses, are in Table IVA-SI-A2. The MANOVA results for both individual and class level analyses are in Table IVA-SI-A3. Most of the analyses at the individual level reach significance. At the class level, only SSCD Involvement is close to significance. As will be discussed below, that one gives support to the evidence that SWF classroom dimensions do tend to increase student affective/social outcomes. The remainder of the discussion will concern the results of the individual level analyses.

The univariate results for the significant three-way interaction of Grade, Income (High by Medium contrast), and SSCD Involvement are in Table IVA-SI-A4. They indicate a significant effect on the SOCL. Students in High Income schools do better in high Involvement classes in both grades; Medium Income school students do better in high Involvement classes in Grade 4 and less well in Grade 5.

Table IVA-SI-A3 shows a significant main effect for SSCD Involvement. Table IVA-SI-A5 shows the effect significant for the POQ, Giving, and Getting Help. The means table supports this result. The vast majority of the apparently larger means are in the High SSCD Involvement category.

There is also a significant main effect for Income. The univariate data are in Table IVA-SI-A6. The POQ and the IAR are significantly affected. Students in High Income schools score higher than students in Medium Income schools.

A significant main effect for Grade was shown in Table IVA-SI-A3. The univariate data in Table IVA-SI-A7 show that the effect is not significant for any individual outcome. Examination of the means suggests that they appear to be higher for Grade 4 on all outcomes but the IAR.

To sum up the data for affective/social outcomes, students are better off in High SSCD Involvement classrooms. However, none of the significant results involved Giving Help or Getting Help.

Table IVA-SI-Al

Distribution of Students and Classes for Affective/Social Outcomes by Grade, Income, and SSCD Involvement
Year 1

Individual Level Analyses

Income	Grade 4		Grade 5	
	SSCD Involvement		SSCD Involvement	
	High	Low	High	Low
High	74	71	28	59
Medium	52	62	18	46
Low	-	-	-	-

Class Level Analyses

Income	High	Low	High	Low
High	4	4	2	3
Medium	2	3	1	2
Low	-	-	-	-

Table IVA-SI-A2.

Student Affective/Social Outcome Mean Scores by Grade, Income, and SSCD Involvement Year 1

Affective/ Social	Income	Means			
		Grade 4		Grade 5	
		SSCD Involvement		SSCD Involvement	
		High	Low	High	Low
SOCL	High	61.96	61.52	63.11	59.61
	Medium	60.77	60.02	58.89	61.09
	~~Low~~				
	Unweighted Means	61.37	60.77	61.00	60.35
POQ	High	31.08	29.51	30.68	25.56
	Medium	26.02	25.77	30.33	24.33
	~~Low~~				
	Unweighted Means	28.55	27.64	30.51	24.95
IAR	High	18.57	19.07	19.64	18.58
	Medium	18.08	17.18	18.72	18.78
	~~Low~~				
	Unweighted Means	18.33	18.13	19.18	18.68
Giving Help	High	1.99	1.93	2.10	1.81
	Medium	2.03	1.96	1.99	1.88
	~~Low~~				
	Unweighted Means	2.01	1.95	2.05	1.85
Getting Help	High	2.15	1.96	2.13	1.83
	Medium	2.10	2.03	2.05	1.95
	~~Low~~				
	Unweighted Means	2.13	2.00	2.09	1.89

Table IVA-SI-A3

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and SSCD Involvement

Year 1

Individual Level Analyses

Source	F[a]	p
Grade	2.64	.023
Income (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	4.93	.001
Program	4.94	.001
Grade X Program	2.02	.075
Income X Program (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	1.30	.262
Grade X Income X Program (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	2.24	.050

[a] Degrees of freedom = 5,398

Class Level Analyses

Source	F[a]	p
Grade	.47	.790
Income (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	1.02	.459
Program	3.21	.062
Grade X Program	.97	.485
Income X Program (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	1.50	.281
Grade X Income X Program (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	1.41	.308

[a] Degrees of freedom = 5,9

Table IVA-SI-A4

ANOVA for Student Affective/Social Outcomes for Three-Way Interaction of Grade, Income, and SSCD Involvement

Year 1

Affective/Social Outcomes	High X Medium + ~~Low~~ Income F[a]	p	Medium X Low Income F[a]	p
SOCL	5.49	.020		
POQ	.55	.459	NO LOW	
IAR	2.98	.085	INCOME	
Giving Help	.62	.431	CLASSES	
Getting Help	.18	.669		

[a] Degrees of freedom = 1,402

Table IVA-SI-A5

ANOVA for Student Affective/Social Outcomes for Main Effects of SSCD Involvement

Year 1

Affective/Social Outcomes	F[a]	p
SOCL	1.73	.189
POQ	12.87	.001
IAR	.68	.410
Giving Help	3.93	.048
Getting Help	12.40	.001

[a] Degrees of freedom = 1,402

Table IVA-SI-A6

ANOVA for Student Affective/Social Outcomes for Main Effects of Income
Year 1

Affective/Social Outcomes	High X Medium + ~~Low~~ Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	2.59	.109		
POQ	21.06	.001	NO LOW	
IAR	6.07	.014	INCOME	
Giving Help	.29	.591	CLASSES	
Getting Help	.43	.513		

[a] Degrees of freedom = 1,402

Table IVA-SI-A7

ANOVA for Student Affective/Social Outcomes for Main Effects of Grade
Year 1

Affective/Social Outcomes	F[a]	p
SOCL	.40	.526
POQ	3.16	.076
IAR	3.17	.076
Giving Help	.58	.447
Getting Help	2.85	.092

[a] Degrees of freedom = 1,402

(c) Summary for Involvement, as Measured by the SSCD

Students are likely to have more favorable outcomes if they are in classes which are high in Involvement as measured by the SSCD.

Regarding cognitive outcomes, that result is particularly true for students in Grade 4. The trend is the same for Grade 5 students in High Income schools, but the opposite may be true for Grade 5 students in Medium Income schools.

On affective/social outcomes, students generally have higher outcomes if they are in High SSCD Involvement classes.

(2) Data Regarding Classroom Involvement as Measured by the RCS

Data obtained with the RCS instrument provide data only on verbal interaction of teacher and students. The instrument was originally designed for other purposes and was used in this project because many of the categories observed seemed appropriate. (For fuller discussion of the selection and use of the RCS for this project, see Section IV.A.3. above.) Two of the categories were used to derive a measure of involvement: Teacher Warms and Teacher Cools.

The score developed for each classroom on these categories was used to categorize classrooms as High or Low. Some classrooms could not be satisfactorily categorized and were not included in the analyses. The data reported here are from 22 classrooms.

(a) Data on Cognitive Outcomes

The distribution of students and classes across cells in the three-factor design is shown in Table IVA-RI-CI. The Grade 4 Low Income High RCS Involvement cell is empty. Analyses involving Low Income alone will not be reported.

There are three cells in which student data come from only one class. One of these is the Grade 4 Medium Income High RCS Involvement cell. That class was generally high in its grade and income set and above the mean in its grade on the ITBS outcomes. It tended to be in the middle of its set and above the mean for its grade on TTCT outcomes. It was above the mean of its set and in the middle of its grade on Unlikely Things.

A second class, that in the Grade 4 Medium Income Low RCS Involvement cell, tended to be quite low in its set and grade on all cognitive outcomes.

The third class was in Grade 5 Medium Income High RCS Involvement. That class tended to be quite high on the cognitive outcomes.

The means for the cognitive outcomes are provided in Table IVA-RI-C2. The MANOVA data are in Table IVA-RI-C3 for both individual level and class level analyses. While many are significant at the individual level, only the main effects of RCS Involvement are significant at the class level. This class level result indicates that students in classrooms high in RCS Involvement are likely to have higher cognitive outcomes in Reading and References, and the effect is nearly significant for Flexibility. The remainder of the discussion will be based on the individual level analyses.

The three-way interaction of Grade, Income and RCS Involvement is not significant.

The interaction of Income (High by Medium contrast) by Program is significant. The univariate results are in Table IVA-RI-C4. The effect is significant for all cognitive outcomes except References and Flexibility. Examination of the means indicates that students in High RCS Involvement classrooms are likely to have higher outcome scores and that the differences are greater for students in Medium Income schools.

The Grade by RCS Involvement interaction is not significant.

The main effect of RCS Involvement is significant. The univariate results are in Table IVA-RI-C5. The effect is significant for all cognitive outcomes and favors students in High RCS Involvement classrooms. Examination of the means indicates that this result holds in addition to the interaction of Income and RCS Involvement.

Income also has a significant main effect. Univariate data are in Table IVA-RI-C6. The effect is significant for all outcomes except Originality. Examination of the means suggests that High Income school students usually have higher outcome scores on the ITBS and Unlikely Things. However, on the TTCT measures, students in High RCS Involvement classes in Medium Income schools usually have higher scores than students in High Income schools.

There is also a significant main effect for Grade. As found in nearly all cases on cognitive outcomes, students in Grade 5 tend to have higher scores than students in Grade 4.

To sum up the results for the analyses of cognitive outcomes, students in High RCS Involvement classes tend to have higher cognitive outcome scores than students in Low RCS Involvement classes.

Table IVA-RI-C1

Distribution of Students and Classes for Cognitive Outcomes
by Grade, Income, and RCS Involvement

Year 1
Individual Level Analysis

Income	Grade 4		Grade 5	
	RCS Involvement		RCS Involvement	
	High	Low	High	Low
High	58	55	29	57
Medium	24	18	24	45
Low	0	27	42	35

Class Level Analysis

Income	Grade 4		Grade 5	
	RCS Involvement		RCS Involvement	
	High	Low	High	Low
High	3	3	2	3
Medium	1	1	1	2
Low	0	2	2	2

Table IVA-RI-C2

Student Cognitive Outcome Mean Scores by Grade, Income and RCS Involvement
Year 1

		Means			
		Grade 4 RCS Involvement		Grade 5 RCS Involvement	
Cognitive Outcomes	Income	High	Low	High	Low
Reading (ITBS)	High	4.64	4.05	5.77	4.84
	Medium	4.04	2.96	5.06	3.36
	Low	0	3.27	3.93	4.09
	Unweighted Mean	4.34	3.43	4.92	4.10
References (ITBS)	High	4.68	4.01	6.04	4.94
	Medium	4.17	2.73	4.85	3.82
	Low	0	3.42	4.03	4.31
	Unweighted Mean	4.43	3.39	4.97	4.36
Math Problem Solving (ITBS)	High	4.62	4.39	5.79	5.06
	Medium	4.20	3.04	4.95	3.82
	Low	-	3.50	3.99	4.25
	Unweighted Mean	4.41	3.64	4.91	4.38
Fluency (TTCT)	High	22.28	9.93	28.69	26.49
	Medium	23.67	11.11	31.96	19.20
	Low	0	13.44	20.85	24.23
	Unweighted Mean	22.98	11.49	27.17	23.31
Flexibility (TTCT)	High	12.50	10.20	14.25	11.74
	Medium	12.13	6.06	14.33	10.40
	Low	0	7.15	9.50	11.34
	Unweighted Mean	12.32	7.80	12.69	11.16
Originality (TTCT)	High	23.78	21.96	28.00	27.32
	Medium	25.96	11.50	40.38	20.44
	Low	0	17.00	26.86	28.59
	Unweighted Mean	24.87	16.82	31.75	25.45
Unlikely Things	High	32.07	30.56	32.83	32.19
	Medium	29.75	22.61	32.58	26.20
	Low	0	28.59	28.10	28.31
	Unweighted Mean	30.91	27.25	31.17	28.90

Table IVA-RI-C3

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and RCS Involvement
Year 1

Individual Level Analysis

Source	F^a	p
Grade	8.02	.001
Income (High X Medium +-~~Low)~~- ~~(Medium-X-Low)~~	10.60	.001
Program	6.74	.001
Grade X Program	1.55	.149
Income X Program (High X Medium +-~~Low)~~- ~~(Medium-X-Low)~~-	3.92	.001
Grade X Income X Program (High X Medium +-~~Low)~~-- ~~(Medium-X-Low)~~	1.67	.115

[a] Degrees of freedom = 7,397

Class Level Analysis

Source	F^a	p
Grade	2.15	.208
Income (High X Medium +-~~Low)~~ ~~(Medium-X-Low)~~	3.06	.118
Program	6.40	.029
Grade X Program	1.08	.482
Income X Program (High X Medium +-~~Low)~~- ~~(Medium-X-Low)~~	2.01	.230
Grade X Income X Program (High X Medium +-~~Low)~~- ~~(Medium-X-Low)~~	1.37	.376

[a] Degrees of freedom = 7,5

Table IVA-RI-C4

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income and RCS Involvement
Year 1

Cognitive Outcomes	High X Medium + ~~Low Income~~		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	5.46	.020		
References	1.36	.244		
Math Problem Solving	4.36	.038		
Fluency	11.19	.001	EMPTY CELL	
Flexibility	3.47	.063		
Originality	12.53	.001		
Unlikely Things	11.90	.001		

[a] Degrees of freedom = 1,403

Table IVA-RI-C5
ANOVA for Student Cognitive Outcomes for Main Effects of RCS Involvement
Year 1

Cognitive Outcomes	F[a]	p
Reading	31.41	.001
References	25.18	.001
Math Problem Solving	11.12	.001
Fluency	10.41	.001
Flexibility	19.29	.001
Originality	9.70	.002
Unlikely Things	10.91	.001

[a] Degrees of freedom = 1,403

Table IVA-RI-C6

ANOVA for Student Cognitive Outcomes for Main Effects of Income Year 1

Cognitive Outcomes	High X Medium ~~+ Low Income~~		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	45.67	.001	EMPTY CELL	
References	40.54	.001		
Math Problem Solving	36.67	.001		
Fluency	5.01	.026		
Flexibility	5.07	.025		
Originality	0.65	.421		
Unlikely Things	32.85	.001		

[a] Degrees of freedom = 1,403

Table IVA-RI-C7

ANOVA for Student Cognitive Outcomes for Main Effects of Grade Year 1

Cognitive Outcomes	F[a]	p
Reading	29.51	.001
References	40.88	.001
Math Problem Solving	26.48	.001
Fluency	26.22	.001
Flexibility	15.09	.001
Originality	14.79	.001
Unlikely Things	2.61	.107

[a] Degrees of freedom = 1,403

(b) Data on Affective/Social Outcomes

The distribution of students and classes across cells in the three-factor design is shown in Table IVA-RI-A1. There are three cells in which student data come from only one class. One of these is the Grade 4 Medium Income High RCS Involvement cell. This class tended to be low in its grade and income set, except for the IAR on which it was above the mean.

A second class, in the Grade 4 Medium Income High RCS Involvement cell, tended to have scores above the mean for its grade and income set, except on the IAR, on which it was low.

The third class was in Grade 5 Medium Income High RCS Involvement. This class was generally low, except for the SOCL, on which it was high.

The means for the individual level analyses are presented in Table IVA-RI-A2. The MANOVA data for both individual and class level analyses are in Table IVA-RI-A3. The major differences between the tables are in the level of significance (higher on the individual analyses), and the main effects of Grade and Income are significant in the individual level and not in the class level. The remainder of the discussion will be based on the individual level analyses.

The three-way interaction of Grade, Income and RCS Involvement is not significant. The interaction of Grade and RCS Involvement is also not significant.

The interaction of Income and RCS Involvement is significant, based on the contrast of High Income with Medium. The univariate data are in Table IVA-RI-A4. The effect of the interaction is significant for Giving and Getting Help, and nearly so for the POQ. These data indicate that students in High Income schools in High RCS Involvement classes are likely to have higher scores than students in Low RCS Involvement classes; but that students in Medium Income schools may have higher scores if they are in Low RCS Involvement classes.

Table IVA-RI-A3 indicates a significant main effect for RCS Involvement. The univariate results are in Table IVA-RI-A5. The effect is significant for the SOCL, the POQ, and for Getting Help. Students in High RCS Involvement classes are likely to have higher scores.

Income main effects are also significant for the High by Medium Income contrast. Univariate results are in Table IVA-RI-A6. The effect is significant for the POQ and the IAR. Students in High Income schools are likely to have higher scores.

Grade main effects are also significant. The univariate data are in Table IVA-RI-A7. None of them reach .05 significance, although the POQ is significant at the .07.

Summing up the data on affective/social outcomes, being in High RCS Involvement classes tends to be associated with higher scores in High Income schools. This may be reversed in Medium Income schools. Students in High Income schools tend to have higher scores on attitudes toward school (POQ) and on internal locus of control (IAR).

(c) Summary for RCS Involvement

Over-all, the effect is more positive on student outcomes than not. This is clearer on cognitive outcomes than on affective-social outcomes. It is also clearer for students in High Income schools.

Table IVA-RI-A1

Distribution of Students and Classes for Affective/Social Outcomes by Grade, Income, and RCS Involvement

Year 1

Individual Level Analysis

Income	Grade 4 RCS Involvement High	Grade 4 RCS Involvement Low	Grade 5 RCS Involvement High	Grade 5 RCS Involvement Low
High	57	54	28	59
Medium	25	15	25	39
Low	0	26	42	33

Class Level Analysis

Income	Grade 4 RCS Involvement High	Grade 4 RCS Involvement Low	Grade 5 RCS Involvement High	Grade 5 RCS Involvement Low
High	3	3	2	3
Medium	1	1	1	2
Low	0	2	2	2

Table IVA-RI-A2.

Student Affective/Social Outcome Mean Scores by Grade, Income and RCS Involvement Year 1

Affective/ Social	Income	Means			
		Grade 4		Grade 5	
		RCS Involvement		RCS Involvement	
		High	Low	High	Low
SOCL	High	62.28	61.69	63.11	59.61
	Medium	59.44	60.47	63.24	61.26
	Low	0	57.35	58.98	59.30
	Unweighted Means	60.86	59.84	61.78	60.06
POQ	High	30.74	30.15	30.68	25.56
	Medium	25.72	28.13	25.00	23.62
	Low	0	24.58	31.02	26.73
	Unweighted Means	28.23	27.62	28.90	25.30
IAR	High	18.70	19.00	19.64	18.58
	Medium	18.80	16.47	17.24	17.85
	Low	0	17.92	18.90	17.33
	Unweighted Means	18.75	17.80	18.59	17.92
Giving Help	High	1.96	1.86	2.10	1.81
	Medium	1.92	2.13	1.87	1.99
	Low	0	1.86	2.06	2.09
	Unweighted Means	1.94	1.95	2.01	1.95
Getting Help	High	2.13	1.97	2.13	1.83
	Medium	2.00	2.25	1.84	2.06
	Low	0	1.91	2.12	1.96
	Unweighted Means	2.07	2.04	2.03	1.95

Table IVA-RI-A3

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and RCS Involvement
Year 1
Individual Level Analysis

Source	F[a]	p
Grade	2.28	.046
Income (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	5.59	.001
Program	4.83	.001
Grade X Program	1.08	.371
Income X Program (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	4.13	.001
Grade X Income X Program (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	1.37	.235

[a] Degrees of freedom = 5,388

Class Level Analysis

Source	F[a]	p
Grade	2.22	.163
Income (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	.75	.612
Program	5.75	.020
Grade X Program	.45	.800
Income X Program (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	4.98	.029
Grade X Income X Program (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	.43	.814

[a] Degrees of freedom = 5,7

Table IVA-RI-A4

ANOVA for Student Affective/Social Outcomes for Two-Way Interaction of Income by RCS Involvement

Year 1

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
SOCL	2.30	.131		
POQ	3.26	.072		
IAR	.19	.666	EMPTY CELL	
Giving Help	5.60	.019		
Getting Help	16.52	.001		

[a] Degrees of freedom = 1,392

Table IVA-RI-A5

ANOVA for Student Affective/Social Outcomes for Main Effects of RCS Involvement

Year 1

Affective/Social Outcomes	F^a	p
SOCL	4.50	.035
POQ	17.70	.001
IAR	3.11	.079
Giving Help	1.47	.226
Getting Help	6.14	.014

[a] Degrees of freedom = 1,392

Table IVA-RI-A6

ANOVA for Student Affective/Social Outcomes for Main Effects of Income
Year 1

Affective/Social Outcomes	High X Medium ~~+ Low Income~~		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	.31	.578	EMPTY CELL	
POQ	22.00	.001		
IAR	7.96	.005		
Giving Help	.53	.465		
Getting Help	.29	.590		

[a] Degrees of freedom = 1,392

Table IVA-RI-A7

ANOVA for Student Affective/Social Outcomes for Main Effects of Grade
Year 1

Affective/Social Outcomes	F[a]	p
SOCL	.37	.545
POQ	3.41	.066
IAR	.01	.933
Giving Help	.26	.613
Getting Help	1.76	.186

[a] Degrees of freedom = 1,392

c. Data Regarding SWF Classroom Characteristics Combined

Data regarding classroom characteristics were obtained for five dimensions: Involvement, Relevance, Responsibility, Thinking, and Success Orientation. Data on all five were collected on the SSCD and on all but Relevance on the RCS.

To determine the effects on student outcomes of being in classes which tended to be high on all dimensions, the scores on the dimensions were combined for each instrument, and the classes categorized as high or low. The results of these analyses will be presented next, with SSCD data coming first.

(1) Data Obtained with the SSCD

Classrooms were arrayed from high to low according to their position in the set observed by each observer on each dimension. Those classes on which there tended to be general agreement among observer that they were high were so categorized, and those that tended to be low were so categorized. Some classes could not be categorized. This analysis was done with data on 23 classrooms.

The term to be applied for the categorization "SWF Characteristics Combined as Measured by the SSCD" will be SSCD Over-all.

(a) Data on Cognitive Outcomes

The distribution of students and classes across cells in the three-factor design is shown in Table IVA-ST-C1. There is one cell in Grade 5 with no students.

There are two cells with single classes in them. One is in Grade 4 Medium Income High SSCD Over-all. That class varies from in the middle to low in its Grade and Income set and on the low side of the mean in its class on the ITBS outcomes. It is in the middle or on the high side of its set and grade on the TTCT. It is in the middle of its set and below the mean for its grade on Unlikely Things.

The other single-class cells is in Grade 4 in Low Income in High SSCD Over-all. That class tends to be near the middle of its Grade and Income set and low in its grade on ITBS outcomes. It is high in its set and below the mean in its class on TTCT outcomes. It is high in its set and in the middle in its grade on Unlikely Things.

The means for the cognitive outcomes are provided in Table IVA-ST-C2. The MANOVA data for both individual and class level analyses are in Table IVA-ST-C3. The results of the two analyses are quite different in that none of the class level reached significance, while all main effects and two interactions reached significance at the class level. The individual analysis pattern of means (shown in Table

IVA-ST-C2) was compared with that of the class level (not shown), and the similarity was very high. Both show that most of the means in the High SSCD Over-all category appear to be higher than those in the Low SSCD Over-all category. The means data again indicate that the class level analysis is a much more stringent test of the significance of the same, essentially, distribution of means. The remainder of this discussion will be based on the data from the individual level analysis.

The three-way interaction of Grade, Income, and SSCD Over-all is significant. The univariate results are in Table IVA-ST-C4. The effects are significant for Originality, and nearly so for Math Problem Solving. The means data (in Table IVA-ST-C2) indicate that students in High Income schools in Grade 5 are more likely to have' higher outcomes on Originality in classrooms lower on the classroom dimensions or characteristics/ while Grade 4 comparisons at both income levels and Grade 5 Low Income school students all do better in classrooms High on the dimensions. For Math Problem Solving, Grade 4 students are better off in High SSCD Over-all classroom characteristics, as are High Income school students in Grade 5. Low Income school students in Grade 5 are not better off in high SSCD Over-all classrooms.

Table IVA-ST-C3 displays a significant interaction of Income (High by Low Income contrast) with SSCD Over-all score. The univariate data are in Table IVA-ST-C5. Originality and Unlikely Things are significantly affected, and References is nearly significantly affected. Examination of the means for Originality and Unlikely Things shows that students in Low Income schools have higher scores if they are in High SSCD Over-all classrooms, while there is probably no difference for students in High Income schools. In addition, on Originality, High SSCD Over-all classrooms in High Income schools appear to have lower scores than those in Low Income schools; while the reverse is true for students in Low SSCD Over-all classrooms.

The Grade by SSCD Over-all interaction was not significant.

The main effect of SSCD Over-all was significant. The univariate data are in Table IVA-ST-C6. That table indicates that significance was reached for every cognitive outcome variable. Examination of the means in Table IVA-ST-C2 indicates that these results are principally determined by the data in Grade 4, where every comparison for every income level appears to favor classrooms high in SWF characteristics.

The main effect of Income is also significant. The univariate data are in Table IVA-ST-C7. The effects are significant for all outcome variables except Originality. Examination of the means tables indicates that students in High Income schools nearly always appear to have higher outcome scores than students in Low Income schools.

The main effect of Grade is significant. Univariate data are provided in Table IVA-ST-C8. The effects are significant for all outcome variables and favor Grade 5. This matches expectations for cognitive variables.

To sum up the results for cognitive outcomes, students generally do better in high SWF classrooms, as measured by the SSCD. However, these results are much clearer in Grade 4. In Grade 5, High Income school students appeared to have higher outcome scores in Low SWF classrooms on several variables.

Table IVA-ST-C1

Distribution of Students and Classes for Cognitive Outcomes
by Grade, Income, and SSCD Over-all (Program) Factors
Year 1

Individual Level Analysis

Income	Grade 4		Grade 5	
	SSCD Over-all		SSCD Over-all	
	High	Low	High	Low
High	58	43	29	40
Medium	27	44	0	60
Low	13	37	62	37

Class Level Analysis

Income	Grade 4		Grade 5	
	SSCD Over-all		SSCD Over-all	
	High	Low	High	Low
High	3	2	2	2
Medium	1	2	0	3
Low	1	2	3	2

Table IVA-ST-C2

Student Cognitive Outcome Mean Scores by Grade, Income, and SSCD Over-all (Program) Factors
Year 1

Cognitive Outcomes	Income	Means			
		Grade 4		Grade 5	
		SSCD Over-all		SSCD Over-all	
		High	Low	High	Low
Reading (ITBS)	High	4.64	4.11	5.77	5.18
	Medium	3.54	3.18	0	4.09
	Low	3.61	2.99	3.75	3.91
	Unweighted Mean	3.93	3.43	4.76	4.39
References (ITBS)	High	4.68	3.97	6.04	5.04
	Medium	3.55	3.20	0	4.39
	Low	3.52	2.84	4.01	3.84
	Unweighted Mean	3.92	3.34	5.03	4.42
Math Problem Solving (ITBS)	High	4.62	4.05	5.79	5.24
	Medium	3.58	3.54	0	4.33
	Low	3.95	2.66	3.78	3.91
	Unweighted Mean	4.05	3.42	4.79	4.49
Fluency (TTCT)	High	22.28	18.72	28.69	29.53
	Medium	21.85	16.39	0	26.07
	Low	17.46	13.05	25.02	18.57
	Unweighted Mean	20.53	16.05	26.86	24.72
Flexibility (TTCT)	High	12.50	9.74	14.24	13.18
	Medium	9.81	8.11	0	11.80
	Low	8.62	7.46	11.35	8.81
	Unweighted Mean	10.31	8.44	12.80	11.26
Originality (TTCT)	High	23.78	18.63	28.00	34.65
	Medium	27.37	16.57	0	31.33
	Low	21.92	16.51	32.56	21.92
	Unweighted Mean	24.36	17.24	30.28	29.46
Unlikely Things	High	32.07	31.58	32.83	33.25
	Medium	29.11	24.70	0	29.23
	Low	30.46	26.00	29.39	25.89
	Unweighted Mean	30.55	27.43	31.11	29.46

Table IVA-ST-C3

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and SSCD Over-all

Year 1

Individual Level Analysis

Source	F[a]	p
Grade	12.76	.001
Income ~~(High-X-Medium-+-Low)~~- High (~~Medium~~ X Low)	26.45	.001
Program	3.95	.001
Grade X Program	.97	.454
Income X Program -~~(High-X-Medium-+-Low)~~- (High ~~Medium-~~X Low)	4.40	.001
Grade X Income X Program ~~(High-X-Medium-+-Low)~~ (High ~~Medium-~~X Low)	2.05	.048

[a] Degrees of freedom = 7,433

Class Level Analysis

Source	F[a]	p
Grade	3.06	.097
Income-~~(High-X-Medium-+-Low)~~- High ~~Medium-~~X Low)	3.10	.095
Program	2.10	.192
Grade X Program	.45	.839
Income X Program -~~(High-X-Medium-+-Low)~~ (High ~~Medium~~ X Low)	2.17	.182
Grade X Income X Program -~~(High-X-Medium-+-Low)~~ (High ~~Medium~~ X Low)	.80	.614

[a] Degrees of freedom = 7,6

Table IVA-ST-C4

ANOVA for Student Cognitive Outcomes for Three-Way Interaction of Grade, by Income, by SSCD Over-all Program Factors
Year 1

Cognitive Outcomes	High X ~~Medium~~ + Low Income		Medium X Low Income	
	F^a	p	F^a	p
Reading	1.04	.309		
References	1.06	.303		
Math Problem Solving	3.34	.068		
Fluency	1.32	.251	EMPTY CELL	
Flexibility	1.90	.168		
Originality	4.01	.046		
Unlikely Things	.04	.843		

[a] Degrees of freedom = 1,439

Table IVA-ST-C5

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income by SSCD Over-all Program Factors
Year 1

Cognitive Outcomes	High X ~~Medium~~ + Low Income		Medium X Low Income	
	F^a	p	F^a	p
Reading	2.41	.121		
References	3.35	.068		
Math Problem Solving	.36	.550		
Fluency	1.88	.172	EMPTY CELL	
Flexibility	.01	.946		
Originality	4.89	.028		
Unlikely Things	6.90	.009		

[a] Degrees of freedom = 1,439

Table IVA-ST-C6

ANOVA for Student Cognitive Outcomes for Main Effects of SSCD Over-all
Year 1

Cognitive Outcomes	F[a]	p
Reading	4.94	.027
References	14.72	.001
Math Problem Solving	6.41	.012
Fluency	8.22	.004
Flexibility	14.04	.001
Originality	7.46	.007
Unlikely Things	9.72	.002

[a] Degrees of freedom = 1,439

Table IVA-ST-C7

ANOVA for Student Cognitive Outcomes for Main Effects of Income
Year 1

Cognitive Outcomes	High X ~~Medium~~ + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	97.21	.001	EMPTY CELL	
References	98.78	.001		
Math Problem Solving	100.83	.001		
Fluency	20.00	.001		
Flexibility	38.25	.001		
Originality	2.83	.093		
Unlikely Things	56.58	.001		

[a] Degrees of freedom = 1,439

Table IVA-ST-C8

ANOVA for Student Cognitive Outcomes for Main Effects of Grade
Year 1

Cognitive Outcomes	F^a	p
Reading	46.15	.001
References	74.16	.001
Math Problem Solving	54.55	.001
Fluency	46.35	.001
Flexibility	34.22	.001
Originality	37.94	.001
Unlikely Things	9.48	.002

[a] Degrees of freedom = 1,439

(b) Data on Affective/Social Outcomes

The distribution of students across cells in the three-factor design is shown in Table IVA-ST-A1. There is one cell in Grade 5 with no students.

There are three cells with single classes. One is in Grade 4 Medium Income High SSCD Over-all. That class tends to be in the middle or on the high side of its grade and income set and in the middle of its grade on the SOCL, the POQ, and the IAR. It is below the mean of its set and in the middle of its grade on Giving Help. It is high in its set and grade on Getting Help.

The second class is in Grade 4 Low Income High SSCD Over-all. That class is low in its grade and income set and in its grade on the SOCL and the POQ. It is high in its set and above the mean in its grade on the IAR. It is low in its set and grade on Giving and Getting Help.

The third cell with a single class is in Grade 4 Low Income Low SSCD Over-all. It is near or above the mean for its grade and income set on the SOCL, the POQ, and the IAR. It is below the mean for its grade and income set on Giving and Getting Help. It is below the mean for its grade on all affective/social outcomes.

The means for the affective/social outcomes are provided in Table IVA-ST-A2. The MANOVA results for both the individual level and class level analyses are in Table IVA-ST-A3. While the results are different, the ones reaching significance in the class level analyses are the two with the largest F ratios in the individual level analyses. The patterns of means for the class level (not shown) is quite similar to that for the individual level analyses. The remainder of the discussion will be based on the individual level analyses.

The three-way interaction is significant for the High by Low Income contrast. The univariate results are in Table IVA-ST-A4. The effect of the interaction was significant for the IAR (Intellectual Achievement Responsibility). The means (in Table IVA-ST-C2) indicate that Grade 4 High Income school students have higher outcomes in classrooms which are low in SWF characteristics, while Grade 5 High Income school students have higher outcomes in High SWF Characteristics classrooms. The reverse is true for Low Income school students. This interaction reveals mixed results of the impact of the classroom characteristics.

There is a significant interaction between Income and SSCD Over-all score. Table IVA-ST-A5 shows the ANOVA for the individual outcomes and shows that the effect is significant only for the POQ (Pupil Opinion Questionnaire). Students in High Income schools in both grades have more favorable attitudes toward school if they are in classrooms High in SSCD Over-all. However, students in Low Income schools have more favorable attitudes in Low SSCD Over-all.

The Grade by SSCD Over-all interaction was not significant, though nearly so.

SWF classroom characteristics, measured by SSCD Over-all, had a significant main effect. Table IVA-ST-A6 provides the ANOVAs for the affective/social outcomes. The effect is significant for the POQ and for Getting Help. The means for the POQ indicate that students in High SSCD Over-all classrooms have more favorable attitudes toward school. Examination of those means suggests, however, that the data for High Income school Grade 5 students may especially influence this result. The results for Getting Help are particularly influenced by Grade 4 data, where High SSCD Over-all students appear to have higher scores at every income level.

Table IVA-ST-A3 indicates that Income also has a significant main effect. Univariate results are in Table IVA-ST-A7. The effect is significant for SOCL and the IAR. The means indicate that students in High Income schools generally score higher. The results are more clear-cut for the SOCL.

To sum up the findings for the affective/social outcomes, the results are rather mixed. The significant main effect of SSCD Over-all does provide some justification for seeing the results as giving support to the effectiveness of the SWF program characteristics in classrooms.

(3) Summary for All Classroom Characteristics, as Measured by the SSCD

Generally, students are likely to be beneficially affected by being in classrooms high on SWF characteristics as measured by SSCD Over-all. The effects are particularly clear on cognitive outcomes for students in Grade 4. Students in Grade 5 in High Income schools may do better on Originality and Unlikely Things in Low SWF classrooms. Otherwise, the significant effects on cognitive outcomes favored High SWF classrooms.

On affective/social outcomes, several results favored classrooms high in SWF characteristics. However, the findings are much less clear-cut for these outcomes as compared with cognitive.

On balance, students are better off in High SWF classes.

Class level analyses do not provide many significant results, but support individual level results when they do.

Table IVA-ST-A1

Distribution of Students and Classes for Affective/Social Outcomes by Grade, Income, and SSCD Over-all
Year 1

Individual Level Analyses

Income	Grade 4 SSCD Over-all High	 Low	Grade 5 SSCD Over-all High	 Low
High	57	38	28	39
Medium	25	37	0	61
Low	15	11	59	37

Class Level Analyses

Income	Grade 4 SSCD Over-all High	 Low	Grade 5 SSCD Over-all High	 Low
High	3	2	2	2
Medium	1	2	0	3
Low	1	1	3	2

Table IVA-ST-A2.

Student Affective/Social Outcome Mean Scores by Grade, Income, and SSCD Over-all
Year 1

Affective/ Social	Income	Means Grade 4 SSCD Over-all High	Means Grade 4 SSCD Over-all Low	Means Grade 5 SSCD Over-all High	Means Grade 5 SSCD Over-all Low
SOCL	High	62.28	62.16	63.11	60.31
	Medium	59.96	60.41	0	61.18
	Low	57.07	57.73	60.73	58.54
	Unweighted Means	59.77	60.10	61.92	60.01
POQ	High	30.74	29.26	30.68	25.38
	Medium	27.84	25.81	0	26.77
	Low	24.27	25.00	28.19	29.73
	Unweighted Means	27.62	26.69	29.44	27.29
IAR	High	18.70	19.76	19.64	18.08
	Medium	18.56	16.03	0	18.26
	Low	18.80	16.73	17.08	18.95
	Unweighted Means	18.69	17.51	18.36	18.43
Giving Help	High	1.96	2.03	2.10	2.00
	Medium	1.94	1.99	0	1.91
	Low	1.92	1.76	2.05	2.07
	Unweighted Means	1.94	1.93	2.08	1.99
Getting Help	High	2.13	1.98	2.13	2.03
	Medium	2.18	2.05	0	1.90
	Low	1.89	1.93	2.09	2.07
	Unweighted Means	2.07	1.99	2.11	2.00

Table IVA-ST-A3

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and SSCD Over-all
Year 1
Individual Level Analysis

Source	F[a]	p
Grade	.66	.653
Income (High X ~~Medium +~~ Low) ~~(Medium X Low)~~	4.85	.001
Program	2.88	.015
Grade X Program	2.10	.065
Income X Program (High X ~~Medium +~~ Low) ~~(Medium X Low)~~	2.43	.035
Grade X Income X Program (High X ~~Medium +~~ Low) ~~(Medium X Low)~~	3.52	.004

[a] Degrees of freedom = 5,392

Class Level Analysis

Source	F[a]	p
Grade	1.47	.310
Income (High X ~~Medium +~~ Low) ~~(Medium X Low)~~-	8.01	.008
Program	.98	.491
Grade X Program	.53	.750
Income X Program (High X ~~Medium +~~ Low) ~~(Medium X Low)~~-	1.13	.426
Grade X Income X Program (High X ~~Medium +~~ Low) ~~(Medium X Low)~~-	4.82	.032

[a] Degrees of freedom = 5,7

Table IVA-ST-A4

ANOVA for Student Affective/Social Outcomes for Three-Way Interaction by Grade, Income, and SSCD Over-all
Year 1

Affective/Social Outcomes	High X ~~Medium~~ + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	0.06	.814	EMPTY CELL	
POQ	0.80	.371		
IAR	13.27	.001		
Giving Help	1.09	.296		
Getting Help	0.36	.549		

[a] Degrees of freedom = 1,396

Table IVA-ST-A5

ANOVA for Student Affective/Social Outcomes for Two-Way Interaction of Income by SSCD Over-all
Year 1

Affective/Social Outcomes	High X ~~Medium~~ + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	0.19	.667	EMPTY CELL	
POQ	9.93	.002		
IAR	1.08	.298		
Giving Help	0.06	.809		
Getting Help	1.70	.193		

[a] Degrees of freedom = 1,396

Table IVA-ST-A6

ANOVA for Student Affective/Social Outcomes for Main Effects of SSCD Over-all
Year 1

Affective/Social Outcomes	F^a	p
SOCL	2.95	.087
POQ	4.36	.037
IAR	.00	.956
Giving Help	.07	.794
Getting Help	4.93	.027

[a] Degrees of freedom = 1,396

Table IVA-ST-A7

ANOVA for Student Affective/Social Outcomes for Main Effects of Income
Year 1

Affective/Social Outcomes	High X-~~Medium~~-+ Low Income		Medium X Low Income	
	F^a	p	F^a	p
SOCL	15.61	.001	EMPTY CELL	
POQ	2.77	.097		
IAR	8.91	.003		
Giving Help	0.05	.825		
Getting Help	0.35	.557		

[a] Degrees of freedom = 1,396

(2) Data Obtained with the RCS

The second instrument used to obtain data about classroom characteristics was the Reciprocal Category System, which was explained above in section IV.A.3. This instrument obtained data only on verbal behaviors of teachers and students. Combinations of items permitted scores on four of the SWF classroom dimensions: Involvement, Responsibility, Thinking, and Success Orientation.

For the purposes of this analysis, the scores a classroom obtained on each of those dimensions from each of three observers were examined to determine if the classroom were High or Low. Some classrooms could not be so characterized because of inconsistencies in the classification from different observers. The analysis discussed here was based on data for 33 classrooms.

To provide a short term for "SWF Characteristics Combined as Measured by the RCS," the term RCS Over-all will be used.

(a) Data on Cognitive Outcomes

The distribution of students and classes across the cells in the three-factor design is shown in Table IVA-RT-C1. There is one cell in Grade 4 Low Income with no students. Analyses involving low income data separately will not be reported. In Grade 5, there are two cells with data from only one class. The class in the High Income, Low RCS Over-all, cell tends to have cognitive outcomes on the high side for its grade and income set, and for its grade generally. The class in the Medium Income, High RCS Over-all, cell tends to be near the middle of its set and on the low side of its grade on the ITBS; and on the low side of its set and grade on the TTCT and Unlikely Things. There are no indications of bias in selection or data collection in those classes.

The means of the cognitive outcomes are provided in Table IVA-RT-C2. The MANOVA results for both individual and class level analyses are in Table IVA-RT-C3. The only effect to reach significance in the class level analyses was for Income. That one had the highest F ratio in the individual level analyses. The pattern of means for the two analyses are quite similar. The remainder of the discussion will be based on the individual level analyses.

As shown in Table IVA-RT-C3, the three-way interaction of Grade, Income, and RCS Over-all was not significant.

Income by RCS Over-all, for the High by Medium Income contrast (there was an empty cell in the Low Income cell for Grade 4 High RCS Over-all), was significant. The ANOVA for that finding is in Table IVA-RT-C4. None of the effects for the individual outcome variables was significant.

The Grade by Program interaction is not significant, according to Table IVA-RT-C3. This is somewhat surprising when one examines the means in Table IVA-RT-C2. However, the reversal in Grade 5 of scores for High and Medium Income levels on Fluency and Originality may contribute to the MANOVA result.

The main effect of GWF classroom dimensions, as measured by RCS Over-all, is not significant. The main effects of Income and Grade on cognitive outcomes in Tables IVA-RT-C5 and C6 is a reflection of the findings discussed under Question 1 above.

To sum up the cognitive outcome results, the impact of the classroom dimensions, as expressed in verbal interaction, appears to be very mixed and inconsistent from grade to grade.

Table IVA-RI-C1

Distribution of Students and Classes for Cognitive Outcomes
by Grade, Income, and RCS Over-all
Year 1

Individual Level Analyses

Income	Grade 4		Grade 5	
	RCS Over-all		RCS Over-all	
	High	Low	High	Low
High	59	55	70	24
Medium	51	74	17	147
Low	0	64	83	33

Class Level Analyses

Income	Grade 4		Grade 5	
	RCS Over-all		RCS Over-all	
	High	Low	High	Low
High	3	3	4	1
Medium	2	3	1	6
Low	0	4	4	2

Table IVA-RT-C2

Student Cognitive Outcome Mean Scores by Grade, Income, and RCS Over-all
Year 1

Cognitive Outcomes	Income	Means: Grade 4, RCS Over-all: High	Means: Grade 4, RCS Over-all: Low	Means: Grade 5, RCS Over-all: High	Means: Grade 5, RCS Over-all: Low
Reading (ITBS)	High	4.70	4.05	5.28	5.57
	Medium	3.78	3.59	3.46	3.86
	Low	0	3.23	3.69	4.03
	Unweighted Mean	4.24	3.62	4.14	4.49
References (ITBS)	High	4.57	4.01	5.48	5.36
	Medium	3.84	3.55	4.22	4.41
	Low	0	3.25	3.76	4.39
	Unweighted Mean	4.21	3.60	4.41	4.72
Math Problem Solving (ITBS)	High	4.62	4.39	5.41	5.48
	Medium	3.87	3.64	4.29	4.34
	Low	0	3.22	3.64	4.45
	Unweighted Mean	4.25	3.75	4.45	4.76
Fluency (TTCT)	High	20.71	19.93	26.46	28.79
	Medium	22.71	23.58	16.35	23.44
	Low	0	13.50	19.71	26.09
	Unweighted Mean	21.71	19.00	20.84	26.11
Flexibility (TTCT)	High	11.73	10.20	12.70	13.92
	Medium	10.90	10.72	7.82	11.29
	Low	0	7.52	9.36	11.36
	Unweighted Mean	11.32	9.48	9.96	12.19
Originality (TTCT)	High	20.31	21.96	26.13	35.25
	Medium	26.71	26.35	19.82	27.41
	Low	0	16.84	25.46	30.27
	Unweighted Mean	23.51	21.72	23.80	30.98
Unlikely Things	High	31.53	30.56	32.59	34.33
	Medium	29.41	27.26	25.29	28.59
	Low	0	26.88	28.01	27.39
	Unweighted Mean	30.47	28.23	28.63	30.10

Table IVA-RT-C3

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and RCS Over-all

Year 1

Individual Level Analyses

Source	F[a]	p
Grade	11.13	.001
Income (High X Medium +-~~Low)~~ -~~(Medium-X-Low)~~-	16.72	.001
Program	.88	.524
Grade X Program	1.61	.131
Income X Program (High X Medium +-~~Low)~~ -~~(Medium-X-Low)~~-	2.90	.006
Grade X Income X Program (High X Medium +-~~Low)~~ -~~(Medium-X-Low)~~-	.76	.624

[a] Degrees of freedom = 7,660

Class Level Analyses

Source	F[a]	p
Grade	1.88	.140
Income (High X Medium +-~~Low)~~ -~~(Medium-X-Low)~~-	5.13	.003
Program	.41	.881
Grade X Program	.77	.620
Income X Program (High X Medium +-~~Low)~~ -~~(Medium-X-Low)~~-	1.02	.456
Grade X Income X Program (High X Medium +-~~Low)~~ -~~(Medium-X-Low)~~-	.34	.922

[a] Degrees of freedom = 7,16

Table IVA-RT-C4

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income and RCS Over-all
Year 1

Cognitive Outcomes	High X Medium ~~+ Low Income~~		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	.87	.350	EMPTY CELL	
References	.79	.376		
Math Problem Solving	.07	.798		
Fluency	.19	.663		
Flexibility	1.34	.248		
Originality	.77	.380		
Unlikely Things	.06	.809		

[a] Degrees of freedom = 1,666

Table IVA-RT-C5

ANOVA for Student Cognitive Outcomes for Main Effects of Income
Year 1

Cognitive Outcomes	High X Medium ~~+ Low~~ Income		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	76.02	.001	EMPTY CELL	
References	42.74	.001		
Math Problem Solving	55.19	.001		
Fluency	.66	.418		
Flexibility	5.85	.016		
Originality	.41	.524		
Unlikely Things	39.31	.001		

[a] Degrees of freedom = 1,666

Table IVA-RT-C6

ANOVA for Student Cognitive Outcomes for Main Effects of Grade Year 1

Cognitive Outcomes	F^a	p
Reading	24.90	.001
References	70.08	.001
Math Problem Solving	49.08	.001
Fluency	14.43	.001
Flexibility	10.53	.001
Originality	11.36	.001
Unlikely Things	3.24	.072

[a] Degrees of freedom = 1,666

(b) Data on Affective/Social Outcomes

The distributions of students and classes are shown in Table IVA-RT-A1. As was true for cognitive outcomes, there is one empty cell. The Grade 5 High Income Low RCS Over-all cell has one class. That class tends to have affective/social outcomes scattered around the mean. A second one-cell class is in Grade 5 Medium Income High RCS Over-all. That class tends to have scores on the high side on most affective/social outcomes. The third cell with a single class is in Grade 5 Low Income RCS Over-all score. That class appears to be low on the POQ, the IAR, and Getting Help, in the middle on the SOCL, and high on Giving Help in comparison with its grade and its grade and income sets. There is no evidence of bias in the selection of these classes nor in data collection in them.

Mean scores are in Table IVA-RT-A2 for individual level analyses. The MANOVA results for both individual and class level analyses are in Table IVA-RT-A3. The class level shows no significant results; the individual level shows a significant effect for each of the factors and for the three-way interaction. It is interesting that the result most nearly significant in the class level analysis is for the main effect of RCS Over-all. It gives some support to the belief that classrooms exhibiting characteristics of the SWF program do have an effect. The remainder of the discussion will be based on the results of the individual level analyses.

Table IVA-RT-A4 has the univariate data for the significant three-way interaction of Grade, Income (High by Medium contrast), and RCS Over-all. The effect is significant for the IAR and nearly so for both Giving and Getting Help. Examination of the means shows that the results vary by Grade, by Income, and by outcome measure. They do not give guidance regarding the value of classrooms high in RCS Over-all.

The other interactions are not significant.

There is a significant main effect for RCS Over-all, as shown in Table IVA-RT-A2. The univariate information is in Table IVA-RT-A5. The impact on the POQ is significant, and is nearly so for the IAR. Examination of the means indicates that, on those two outcomes, students in High RCS Over-all classrooms are more likely to have higher outcome scores.

There is a significant main effect for Income. The data for the ANOVAs for the outcome measures are in Table IVA-RT-A6. Results are significant for the POQ and the IAR, and reflect the evidence that students in High Income schools have higher scores than students in Medium Income schools.

There is also a significant main effect for Grade. The ANOVA data are in Table IVA-RT-A6. The effects are not significant for any individual outcome.

To sum up the data on affective/social outcomes, the data indicate that students are probably better off in High RCS Over-all schools, especially in Grade 5.

(c) Summary of RCS Over-all of SWF Dimensions

The evidence suggests that the SWF dimensions, as measured by the RCS Over-all score, may have a somewhat favorable effect on affective/social outcomes, especially the POQ and the IAR. The results of these analyses do not provide indication that those classroom verbal characteristics systematically affect cognitive outcomes.

Table IVA-RT-A1

Distribution of Students and Classes for Affective/Social Outcomes
by Grade, Income, and RCS Over-all
Year 1

Individual Level Analyses

Income	Grade 4		Grade 5	
	RCS Over-all		RCS Over-all	
	High	Low	High	Low
High	59	54	70	23
Medium	50	64	18	139
Low	0	39	81	15

Class Level Analyses

Income	Grade 4		Grade 5	
	RCS Over-all		RCS Over-all	
	High	Low	High	Low
High	3	3	4	1
Medium	2	3	1	6
Low	0	3	4	1

Table IVA-RT-A2

Student Affective/Social Outcome Mean Scores by Grade, Income, and RCS Over-all. Year 1

Affective/ Social	Income	Means			
		Grade 4		Grade 5	
		RCS Over-all		RCS Over-all	
		High	Low	High	Low
SOCL	High	61.73	61.69	61.30	61.77
	Medium	59.70	60.88	58.89	61.39
	Low	0	58.21	59.86	60.00
	Unweighted Means	60.72	60.26	60.02	61.05
POQ	High	31.14	30.15	27.86	26.05
	Medium	26.78	25.19	30.33	25.06
	Low	0	25.69	29.65	24.07
	Unweighted Means	28.96	27.01	29.28	25.06
IAR	High	18.61	19.00	18.84	17.18
	Medium	18.72	16.70	18.72	18.02
	Low	0	18.18	17.94	17.07
	Unweighted Means	18.67	17.96	18.50	17.42
Giving Help	High	1.96	1.87	1.91	2.09
	Medium	1.93	2.04	1.99	1.94
	Low	0	1.97	2.06	2.07
	Unweighted Means	1.95	1.96	1.99	2.03
Getting Help	High	2.15	1.97	1.93	2.11
	Medium	2.09	2.04	2.05	1.98
	Low	0	2.04	2.11	1.95
	Unweighted Means	2.12	2.02	2.03	2.01

Table IVA-RT-A3

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and RCS Over-all
Year 1

Individual Level Analyses

Source	F[a]	p
Grade	2.65	.022
Income (High X Medium + ~~Low)~~ ~~(Medium X Low)~~	3.51	.004
Program	5.59	.001
Grade X Program	1.03	.400
Income X Program (High X Medium + ~~Low)~~ ~~(Medium X Low)~~	1.02	.403
Grade X Income X Program (High X Medium + ~~Low)~~ ~~(Medium X Low)~~	3.01	.011

[a] Degrees of freedom = 5,596

Class Level Analyses

Source	F[a]	p
Grade	1.93	.146
Income (High X Medium + ~~Low)~~ ~~(Medium X Low)~~	1.09	.406
Program	2.50	.075
Grade X Program	.89	.513
Income X Program (High X Medium + ~~Low)~~ ~~(Medium X Low)~~	.56	.732
Grade X Income X Program (High X Medium + ~~Low)~~ ~~(Medium X Low)~~	.43	.825

[a] Degrees of freedom = 5,16

Table IVA-RT-A4

ANOVA for Student Affective/Social Outcomes for Three-Way Interaction of Grade, Income, and RCS Over-all
Year 1

Affective/Social Outcomes	High X Medium ~~+ Low~~ Income		Medium X Low Income	
	F^a	p	F^a	p
SOCL	.10	.751	EMPTY	CELL
POQ	.35	.553		
IAR	6.35	.012		
Giving Help	3.44	.064		
Getting Help	3.55	.060		

[a] Degrees of freedom = 1,600

Table IVA-RT-A5

ANOVA for Student Affective/Social Outcomes for Main Effects of RCS Over-all
Year 1

Affective/Social Outcomes	F^a	p
SOCL	1.08	.299
POQ	15.92	.001
IAR	3.51	.062
Giving Help	.01	.940
Getting Help	2.74	.098

[a] Degrees of freedom = 1,600

Table IVA-RT-A6

ANOVA for Student Affective/Social Outcomes for Main Effects of Income Year 1

Affective/Social Outcomes	High X Medium ~~+ Low Income~~		Medium X Low Income	
	F^a	p	F^a	p
SOCL	3.37	.067	EMPTY CELL	
POQ	13.56	.001		
IAR	2.72	.010		
Giving Help	.39	.534		
Getting Help	.57	.449		

[a] Degrees of freedom = 1,600

Table IVA-RT-A7

ANOVA for Student Affective/Social Outcomes for Main Effects of Grade Year 1

Affective/Social Outcomes	F^a	p
SOCL	1.56	.213
POQ	2.44	.119
IAR	.00	.960
Giving Help	.04	.845
Getting Help	2.76	.097

[a] Degrees of freedom = 1,600

B. Year 2

1. Objectives

During the second year of the study, the objectives were the same as those indicated for Year 1. (See section IV.A.1.)

2. Design

As described in the section on Question 1 above (see Section III.B.2.) the design for Year 2 was a pre-post, high-low comparison, taking into consideration grade and socioeconomic status. The design differed from Year 1 which was a post-test only design. However, as in Year 1, a three-factor multivariate analysis of variance was the analytic approach. Also as in Year 1, the assignment of classrooms to high and to low SWF was done for the various classroom variables according to the position of the class on the measure of that variable. The measures and the scoring procedures which were modified for the second year's study are discussed in the section on measurement.

In Year 2, data were collected in Grades 5 and 6; and the three income levels (used as indicators of socioeconomic level) were based on the proportion of students in the school who were eligible to receive subsidized lunches.

As in Year 1, the analyses were done separately for cognitive and for affective/social outcomes to determine whether the program variables had different consequences for the two kinds of outcomes. However, in the Year 2 design, the mean residual scores (representing differences between predicted and observed scores from pre-post measures) were the data used for comparison of program and factor effects upon student cognitive and affective/social outcomes.

3. Measurement

On the basis of the first year's experience, we modified our data collection procedures. For the SSCD we developed a different format and provided for a more detailed context description of the classroom within the SWF five dimensions framework. We did not modify the SWF dimensions themselves because in our earlier developmental work on measurement, these concepts and their definitions had been accepted by ETC staff as well as by principals and teachers trained in SWF philosophy and practice. Additionally, our first year's experience did not suggest that these concepts were inappropriate as research variables for studying Question 2.

In the following sections, modification and changes in the data collection procedures and tools are described.

a. The Reciprocal Category System (RCS)

The RCS was retained as the measure of verbal characteristics of SWF classroom dimensions without any major modifications. The scoring procedures and RCS variables used in the first year's study were used in the second year. There were some modifications which resulted from the observer training workshop experience. These mainly were in the nature of identifying and defining indicators of classroom contingencies which influenced the data collection and agreeing on a coding procedure for noting them. Modifications also took the form of more concise differentiation of verbal behaviors representing certain RCS verbal categories considered crucial to differentiating between specific SWF verbal dimensions, primarily RCS categories 1 (warms), 2 (accepts), and 3 (elaborates).

The validity of the RCS variables selected for the study of Question 2 have been discussed previously (see Section IV.A.3.)

Concerning reliability, the need to obtain clear evidence that observers were using the RCS in the same way, consistently, and in different contexts, was a primary consideration in planning and implementing the observer training workshop.

Several steps were taken to meet requirements for increasing the reliability of the RCS data in Year 2:

(1) Observer training was increased from 2 weeks (Year 1) to 3 weeks (Year 2).

(2) During the training period, daily checks were made on inter-observer agreements on coding behaviors of the same events.

(3) Different situations for observing and coding were provided, including tape cassettes, videotapes, films, classrooms, to give observers a wide range of verbal and non-verbal behaviors including an emphasis upon those representing SWF dimensions.

(4) Live classrooms were provided for practice and for reliability checks. These classrooms were selected because they were expected to provide observer trainees with the opportunity for observing and coding SWF verbal behaviors. These classrooms were not a part of the study. Two of them were in the Academically Talented program in a school participating in the Success School program. However, their AT status excluded them from the study itself.

(5) Reliability checks were made during the actual collection of observational data.

Observer coding sheets were collected several times a week and specific reliability checks were calculated using Flanders' modification of Scott's method, the same procedure used the first year. Table IVB-1 below summarizes the findings from estimating reliabilities based on data collected during training, using audio-visual presentations and live classrooms.

Table IVB-1

Observer Reliability for RCS Categories Using Flanders' Modification of Scott's Coefficient of Reliability

Observer Code Number	Time 1		Time 2	Time 3	Time 4	Time 5	Time 6*
	Tape Cassette π	Live Classrooms π	Live Classrooms π	Live Classrooms π	Videotape π	Film π	Videotape π
1.	.51	.63	.73	.80	.82	.92	.78
2.	.70	.59	.80	.78	.77	.93	.74
3.	.50	.61	.69	.67	.50	.89	.84
4.	.49	.65	.81	.78	.77	.94	.77
5.	.60	.81	.80	.85	.80	.92	.85
Average	.56	.68	.77	.78	.73	.92	.79

*Reliability check conducted mid-point in the data collection.

b. Success School Classroom Description (SSCD)

(1) Revisions

The validity of the five SWF dimensions, and the behaviors and events used as indicators of them, were considered adequate. (The discussion of their development is in section IV.A.3. above.)

The primary concerns for Year 1 were three-fold: (1) increasing reliability among observers; (2) maintaining independence among the dimensions in the data; and (3) obtaining enough data on all dimensions.

In Year 1, it had been difficult to obtain evidence of high inter-observer reliability, partly because of the infrequent occurrence of indicators of some dimensions, especially Responsibility and Thinking, in training materials.

In the actual SSCD data for Year 1, there was relatively good agreement among observers on about half the classrooms, but a fair amount of disparity regarding the others.

As a part of our re-examination of the SSCD for Year 2, a review was made of observer narrative summaries and of their views and impressions expressed during interviews following data collection in Year 1. This review suggested considerable variation for some classrooms from one observation to another in terms of numbers of students moving in and out of classrooms during observations, in amounts of time taken for recess or non-scheduled activities, for study periods, and for individualized student work on learning tasks.

From this information it appeared that some of the variance in classroom description was probably reflecting variations in the classroom that student experience as a part of the everyday classroom environment.

The review of observer reports and interviews also pointed up some problems in using the SSCD checklist. Observers reported that there were too many items (signs) to adequately observe during a three minute time sample and then to code during the following two minute interval.

Another problem identified in using the SSCD, Year 1, was the limited amount of data that could be collected on individualized study and learning activity and on classroom context materials. Observers identified classrooms in which they thought that the SSCD data did not reflect the level of SWF activity and conditions because SWF context indicators were not available for coding.

In order to more clearly identify problems in using the original SSCD checklist and to examine probable sources of observer variance in coding the same phenomena, the five (of six) original data collectors who were available were re-convened for a one-day observer workshop several months after the first year's data collection. The purpose was for them to review the SSCD manual and items and then to code a series of films and video-tapes especially selected to depict various levels of SWF implementation in the classroom. These materials were carefully selected and precoded to represent various amounts of SWF phenomena distributed across the five dimensions. The results indicated considerable variation among the observers in coding specific items on the SSCD but relatively high agreement in the rank ordering of total scores on specific dimensions.

The information obtained from that workshop was added to previous work with the SSCD, and a major revision of the instrument was started. To increase the likelihood that data would be obtained on all dimensions, the number of behaviors and conditions reflecting them was expanded. To permit inclusion of other classroom phenomena, such things as wall displays, materials used by students in independent study, and classroom groupings were considered. A greatly expanded checklist was developed.

The next step was to determine whether the revised set of indicators could produce enough data. Contact was made with the research coordinator of the Educator Training Center. He agreed to arrange for us to visit classrooms which would be likely to exhibit SWF classroom dimensions, yet provide variety in the amount which would be present. Two members of the research staff visited these classrooms with the ETC research coordinator and used the draft checklist.

The three men found that their rank ordering of classrooms on the dimensions was quite similar, but their coding of specific events was not nearly so similar. They also found that evidence for the five dimensions was in fact present in displays, materials, equipment, and room arrangements.

A continuing problem was evident in the difficulty of coding indicators of Responsibility, several of which seemed to require information about antecedent and consequent events in order to satisfactorily code such things as "ownership," "choice," and "self generation of ideas." Similar difficulties arose regarding Thinking when students were not in verbal interaction.

Encouraged by the tendency for observers to have a similar rank ordering, it was decided that the task of observing could be made less complicated and more reliable by permitting observers to record their view of the frequency with which any indicators of a given dimension occurred periodically during an observation period. This would continue to focus observation on specific indicators but would not require observers to check the particular indicator. By checking whether none, one or two, or three or more positive or negative indicators occurred during a three-minute period, the observers could record the data rapidly, using their use of frequency and knowledge of the specific indicators.

(2) Description of the SSCD for Year 2

The SSCD format for Year 2 consists of a three-page form for recording data on classroom events occurring during a three-minute time sample. The first page of the recording form includes descriptions of behavioral categories representing each of the five SWF dimensions. Each of these dimension categories has two sub-categories, one for indicating presence of positive indicators, the other for indicating the presence of negative indicators of a given dimension. For each positive and negative category on page 1 of the form, space is provided for the observer to record with a checkmark one of the following: (1) indicator not present (0 score); (2) some indication (1 or 2 events appropriate to the dimension are present); and (3) considerable evidence (3 or more events are observed in the given category).

The two remaining pages of the recording form consist of checklist items describing the classroom context. Items were included falling in such categories as subject matter, type of teacher and student activities, adults in class during the observation, types of classroom groupings for learning and other activities, changes in group memberships, in group size, in learning activities as well as items for recording mood and noise levels. Space for indicating numbers of students in and out of the classroom during an observational segment and the numbers participating in classroom activities is also included.

The data collection also included items to be completed by the observer at the end of the classroom visit. These included observers' narrative summaries of their impressions of the relative absence or presence of indicators of each of the five SWF dimensions during their classroom visit. There were also items concerned with the observers' impression concerning the adequacy of the data collected, and with responses of teachers to inquiry concerning their perceptions of the typical or atypical character of the classroom for that observation.

The procedures for using the SSCD during Year 2 were similar to those followed during the first year. The observer watched activity and conditions in the classroom for about three minutes, then recorded observations on the SSCD form. However, instead of checking any behavior which occurred, they rated each of the five dimensions on the positive and negative frequency indexes. This required observers to recall the various indicators of a given dimension and whether one or more had occurred during the three-minute period.

As before, information on subject matter, grouping, etc., was noted.

(a) Deriving SWF Scores from the SSCD (Year 2)

To obtain scores for each of the five positive SWF dimensions and each of the five negative dimensions, the weights for each category response choice checked by the observers were summed across all the three-minute observational time segments comprising one classroom visit. Mean scores were computed for each dimension on each of the positive and negative bi-polar categories. It had been intended that a total dimension score would be computed by algebraically summing the positive and negative scores. However, the actual data collected indicated very minimal use of negative response choices by observers Therefore, negative scores were not used in deriving total dimension scores.

Frequency scores were also computed on various classroom learning characteristics, as for example types of subject matter, group size and change in group membership, in learning activities, etc.

(b) Reliability and Validity of the SSCD (Year 2)

The validity of the SSCD has been discussed previously (see section IV.A.). With regard to reliability, the problems encountered in efforts to obtain adequate indicators of observer agreement during the first year's study were a major consideration in our work to modify the instrument.

It was considered essential, however, that the evidence for observer agreement in using the SSCD in the same way, consistently and in different contexts be established during the training workshop and re-confirmed midway during actual data collection.

The steps taken to provide the training experience and practice intended to enhance observer skills and agreements in using the SSCD, are described in the section on SSCD reliability (see IV.B.3.a.)

In Table IVB-2 are shown the percentages of agreement in codings among observers using the SSCD in the same live classrooms, viewing the same videotape and films over the three week training period and midway during actual data collection.

Table IVB-2

Percentage of Observers' Agreement in Coding Presence or Absence of Signs of SWF Dimensions on the SSCD

Description	Time 1 Live Class-rooms	Time 2 Live Class-rooms	Time 3 Live Class-rooms	Time 4* Video-tape
Mean % agreement	82.6	73.3	79.3	89.0
Range in % of agreements	78.0 to 83.0	60.0 to 90.0	50.0 to 90.3	85.0 to 97.1

*Agreement check made midway during data collection.

4. The Study Sample

The explanation for selecting schools and classrooms for Year 2 is provided in Section III.B.4. of this report. The minor modification in the design having to do with sample selection was specifically intended to increase the power of the research regarding Question 2 and therefore is briefly reviewed here.

In the initial design, the identification of classrooms in Success Schools required that the teachers had participated in the program for at least two courses or two years. As the study progressed the first year, members of the research staff were told by school personnel of teachers who were emphasizing the SWF philosophy and using SWF practices and strategies in their classrooms, even though they had not participated in the SWF program. The initial design had eliminated such classrooms from the study of Question 2 for Year 1. It was therefore decided to attempt to identify a small number of such classrooms and include them in the second year's sample. The rationale for this was that Question 2 was concerned with the study of the effects of SWF classroom variables rather than teacher training upon student outcomes. A specific set of criteria which defined teacher behaviors in terms of the five SWF classroom dimensions was submitted to principals who had participated in the SWF program and had the background and experience to make such identifications. With these sets of criteria, relatively specific to SWF classroom variables, three classes in Grade 5 and three in Grade 6 were identified. These were included in the sample.

A total of thirty-six fifth and sixth grade classrooms were involved in these analyses. For the distribution of classrooms by grade, income and program, see Table IIIB-4.

5. Data Collection

As a result of the problems experienced the first year in collecting data in classrooms where students frequently moved in and out of their homeroom during the school day, an effort was made to collect information concerning the extent to which this was likely to happen the second year. Information concerning team teaching, departmentalization, various special programs going on in the schools were collected, as was information concerning the extent to which teachers and the students assigned to them would share the same learning environment during a school day.

The information from this survey indicated that there would likely be a variety of different amounts of time that teachers and students would spend together. Special problems existed in three of the 14 schools in which 13 of the 36 classrooms were located. In these schools, there was both departmentalization and team teaching. The result of this was that home room teachers and some of the students assigned to them, spent less than half of the time together in a learning setting. Fortunately, however, it was found that within these schools, the fifth and sixth grade teachers who were participating in the study were also the teachers who would be involved in team teaching and in departmentalization activities. Thus, as a part of the data collection, student rosters scheduling their school activities and teacher assignments were collected. This made it possible to identify those students assigned to a given home room teacher who spent more of their school day with another teacher. These students were assigned to the data set for the teacher with whom they spent the most time. Their data were then placed in the three-factor analysis according to the position of that teacher's class on the classroom variable.

Five observers (4 women, 1 man) were employed as observers. All five had had some experience in data collection and all but one had had some experience in classrooms. They were selected by the research team after an interview which identified their interest, their response to the task as outlined and to the kind of learning materials that they would be using. None of the five had had experience or training with systematic observation using either IA or sign procedures such as were used in the present study.

These five observers were given training conducted by the ICS staff and the expert consultant who had participated in the training the previous year. The training consisted of three weeks of intensive work using a variety of training materials including, as indicated in the section on reliability, live classrooms for practice coding. (See IV.B.3. for discussion pursuant to question of observer reliability.)

Immediately following the training in early March, the classroom data collection began and continued into early April. All of the 36 classrooms were visited at least three times by three different observers who spent a total of 168 hours observing and coding data during the three weeks of data collection. This included over 107 hours of SSCD and 60 hours of RCS data which produced 110 sets of SSCD and RCS data. The average time spent in collecting data per classroom was approximately five hours.

The data collection procedure was essentially the same as for the first year with SSCD and RCS IA coding interspersed.

Toward the end of the observation, the observer inquired briefly of the teacher as to his/her perceptions of the classroom activities as typical or atypical during the visit, and then recorded other data including a description of physical characteristics of the classroom. Immediately following completion of an observation, the observer summarizes his/her own impressions concerning the adequacy of the data in describing the classroom and the extent to which they preceived each of the SWF dimensions present or absent in the classroom.

The results from the inquiry of teachers indicated they perdeived 71 percent of the classroom visits as occurring during a typical classroom period. Three (8%) of the 36 teachers indicated that classroom activities were atypical during each of the three visits by observers.

Regarding the adequacy of RCS data in describing the verbal characteristics of classrooms, observer ratings indicated that in 80 percent of the observations they considered the data adequate. With regard to the SSCD, observers' ratings indicated that they considered the data adequate in 94 percent of the observations.

6. Results

a. Categorization of Classrooms as High or Low SWF

(1) Categorization Based on RCS Data

With the SWF dimensions as the conceptual base, a model of SWF characteristics was defined in terms of RCS variables which comprise bi-polar dimensions, as described in sections IV.A.3. and IV.A.6. above. Within this model, RCS variables were identified as representing a high SWF, medium SWF, or low SWF position.

Despite the inter-observer reliability established during training, variability across observations for individual classrooms indicated that the variety of factors influencing classroom activity were present. There were marked variations in the number of students in the class and the amount of verbal interaction occurring. There were also marked differences among classrooms in the amount of interaction, the movement of students, and the times of day at which most of the students were present.

Examination of high and low scores on the pairs of RCS variables providing bi-polar measures of SWF dimensions indicated that few classrooms would be clearly differentiated. For example, only six classrooms adequately met the criteria for adequate measurement on Involvement, which was assessed by the RCS variables "warms" and "cools."

To obtain differentiation of classrooms with the RCS data in an SWF framework, the scores for each classroom on each of the basic RCS variables were retrieved. A determination of the relationship of those scores to a high or low SWF position was made. Then classrooms were arrayed from high to low on each of those RCS variables. For example, a classroom with a high score on "warms" would have a high rank on that variable.

The over-all RCS SWF score for a given classroom was based on the sum of the rank order scores for each of the RCS variables. Classrooms were then arrayed from high to low on those scores, and they were split at the median. Table IVB-3 shows the distribution of classes by Grade and Income and RCS Over-all scores.

Table IVB-3

Distribution of 36 Classrooms by Grade, Income and SWF Over-all (as Measured by the RCS)

	Grade 5		Grade 6	
Income Level	High Overall RCS	Low Overall RCS	High Overall RCS	Low Overall RCS
High	3	2	3	1
Medium	1	6	4	4
Low	3	3	4	2
	7	11	11	7

(2) Categorization Based on SSCD Data

On the SSCD, classrooms were identified as high and low SWF classrooms on each of the five dimensions using the same procedure as described for the first year's study. To summarize, each of the five SSCD dimension scores for each observer and classroom were rank ordered from highest to lowest, the distribution split into thirds and classrooms with scores in the upper, middle and lower one-third were designated High, Medium and Low SWF classrooms respectively. These designations were next examined across the three data collections to determine the level of agreement within classrooms from one observation to the next. For those classrooms with scores in agreement in their designation, data were combined and a mean dimension score computed. These mean scores were then arrayed from highest to lowest scores, the distribution of scores split in half and classrooms with scores above and below the median score designated high and low SWF classrooms respectively.

Examination of the classroom mean scores and subscores comprising them resulted in selecting Involvement and Success Orientation as the specific program factors to be used in the study of Question 2. This decision was based on the fact that a larger number of classrooms had relatively congruent scores across the three data collections and a greater amount of data was recorded by observers in each of the data collections.

The overall SSCD SWF classroom scores were computed by summing across the five dimension scores for each classroom and then computing the overall mean or average score by dividing the total sum by the number of dimension scores. Combining data in this way for Year 2 was possible since in the modified SSCD each dimension score was based on the same number of items and the same measurement scale.

To classify classrooms as high and low overall SWF on the SSCD data, they were arrayed from those with highest to those with lowest overall Mean SSCD scores. The distribution was split in half with high and low classrooms identified as above and below the median score respectively.

In the final identification of high and low SWF classrooms using SSCD scores, ratings based on observers' impressions and on various classroom characteristics were examined across all 36 classrooms. These data helped substantiate the classifying of most classrooms on the basis of SSCD scores. In several instances they provided the additional information needed to make decisions concerning several classrooms that scores on the SSCD alone had not clearly identified.

The final classification of classrooms as high and low on SWF Over-all, Involvement and Success Orientation are presented in Table IVB-4 below.

Table IVB-4

Distribution of SSCD High and Low SWF Classrooms by Grade and Income

Income Level	SWF Over-all				Involvement				Success Orientation			
	Grade 5		Grade 6		Grade 5		Grade 6		Grade 5		Grade 6	
	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
High	1	4	2	0	2	2	1	2	1	4	2	2
Medium	1	3	3	3	1	6	5	3	4	3	4	4
Low	4	1	4	2	4	3	4	2	3	3	4	2
Total	6	8	9	5	7	11	10	7	8	10	10	8

b. Impact of Classroom Involvement

(1) Data Regarding Classroom Involvement as Measured by the SSCD

(a) Data on Cognitive Outcomes

The distribution of students and classes is shown in Table IVB-SI-1. There are two single-class cells. One of these is in Grade 5 in Medium Income in High SSCD Involvement. On cognitive outcomes, this class was low in its grade and income set on most measures. This tended to be true on both pretest and posttest. The second cell with a single class was in Grade 6 in High Income in High SSCD Involvement. On the pretest, this class tended to be high in its grade and in the middle of its grade and income set. On the posttest, this class tended to be high in comparison with its grade and income set.

The mean scores for the individual level analyses are shown in Table IVB-SI-C1.

The MANOVA results for both individual and class level analyses are shown in Table IVB-SI-C2. While all the main effects and two of the interactions are significant at the individual level, only the main effects of Grade and Income are significant at the class level. The pattern of means is quite similar for both. Again, the class level analyses provide a more stringent test and no reversals of the individual level analyses.

The remainder of the discussion will be based on the individual level analyses.

A significant Income (Medium by Low Income contrast) by SSCD Involvement interaction is shown in Table IVB-SI-C2. The univariate results are presented in Table IVB-SI-C3. The effects are significant for the TTCT measures. Examination of the means table indicates that students in Medium Income schools have higher scores if they are in classes low in SSCD Involvement, while students in Low Income classes have higher scores in classes high in SSCD Involvement.

There is also a significant interaction of Grade by Program. The univariate data are in Table IVB-SI-C4. They indicate that the effect is significant for References and very close for Math

Problem Solving. The means table indicates that students in Grade 6 in High SSCD Involvement classes have higher References scores; in Grade 5 such differences are not found.

There is a significant main effect for SSCD Involvement. Table IVB-SI-C5 provides the univariate results. The effects are significant for References and Math Problem Solving. The means indicate that students tend to have higher outcomes if they are in classes high in SSCD Involvement.

Table IVB-SI-C2 indicates a significant main effect for Income, both the High by Medium plus Low contrast and for the Medium by Low Income contrast. The univariate data are in Table IVB-SI-C6. In the first contrast, the effects are significant for References, Math Problem Solving, Flexibility, and Unlikely Things. Students in High Income schools tend to have higher scores. Students in Medium Income schools tend to have higher scores than students in Low Income schools. Again, the results support the general findings of research on the relationship of socio-economic status to achievement on cognitive measures.

There is a significant main effect for Grade. The univariate data in Table IVB-SI-C7 show the effect significant on Originality and approaching it for Unlikely Things.

To sum up the results for the cognitive outcomes, students in Grade 6 appear to benefit more from being in high SSCD Involvement classes, and the same seems generally true of students in Low Income schools. On balance, it would appear better to have students in High SSCD Involvement situations.

Table IVB-SI-1

Distribution of Students and Classes by Grade, Income, and SSCD Involvement

Year 2

Individual Level Analyses

Income	Grade 5 SSCD Involvement High	Grade 5 SSCD Involvement Low	Grade 6 SSCD Involvement High	Grade 6 SSCD Involvement Low
High	40	75	26	50
Medium	22	163	124	60
Low	76	42	74	28

Class Level Analyses

Income	Grade 5 SSCD Involvement High	Grade 5 SSCD Involvement Low	Grade 6 SSCD Involvement High	Grade 6 SSCD Involvement Low
High	2	3	1	2
Medium	1	6	5	3
Low	4	2	4	2

Table IVB-SI-C1

Student Cognitive Outcome Mean Scores by Grade, Income, and SSCD Involvement
Year 2

Cognitive Outcomes	Income	Means			
		Grade 5		Grade 6	
		SSCD Involve.		SSCD Involve.	
		High	Low	High	Low
References (ITBS)	High	.157	.169	.582	.181
	Medium	-.132	-.085	.150	-.231
	Low	-.137	-.156	-.020	-.273
	Unweighted Mean	-.037	.024	.237	-.108
Math Problem Solving (ITBS)	High	.037	.129	.138	.203
	Medium	-.055	-.061	.077	-.349
	Low	.101	-.087	.037	-.148
	Unweighted Mean	.028	-.007	.084	-.098
Fluency (TTCT)	High	.002	.023	.279	-.046
	Medium	-.123	.232	-.073	.021
	Low	-.086	-.459	.036	-.291
	Unweighted Mean	-.069	-.058	.081	-.105
Flexibility (TTCT)	High	-.053	-.016	.370	.269
	Medium	-.202	.140	.055	.115
	Low	-.131	-.563	-.065	-.181
	Unweighted Mean	-.129	-.146	.120	.067
Originality (TTCT)	High	-.002	.079	.414	-.110
	Medium	.010	.261	-.140	.006
	Low	.016	-.533	.037	-.354
	Unweighted Mean	.008	-.064	.104	-.153
Unlikely Things	High	-.075	.138	.324	.144
	Medium	-.166	-.029	.016	-.104
	Low	-.145	-.361	.068	-.054
	Unweighted Mean	-.129	-.084	.136	-.005

Table IVB-SI-C2

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and SSCD Involvement
Year 2

Individual Level Analyses

Source	F^a	p
Grade	4.59	.001
Income (High X Medium + Low)	10.11	.001
(Medium X Low)	3.71	.001
Program	3.88	.001
Grade X Program	3.40	.003
Income X Program		
(High X Medium + Low)	1.56	.155
(Medium X Low)	5.12	.001
Grade X Income X Program		
(High X Medium + Low)	1.50	.176
(Medium X Low)	1.48	.181

[a] Degrees of freedom = 6,751

Class Level Analyses

Source	F^a	p
Grade	4.06	.010
Income (High X Medium + Low)	3.41	.020
(Medium X Low)	1.68	.183
Program	.96	.479
Grade X Program	1.32	.298
Income X Program		
(High X Medium + Low)	.76	.607
(Medium X Low)	1.00	.458
Grade X Income X Program		
(High X Medium + Low)	1.19	.356
(Medium X Low)	.44	.842

[a] Degrees of freedom = 6,18

Table IVB-SI-C3

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income by SSCD Involvement Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
References	NOT SIGNIFICANT		0.40	.525
Math Problem Solving			0.08	.771
Fluency			22.90	.001
Flexibility			15.29	.001
Originality			27.62	.001
Unlikely Things			3.01	.083

[a] Degrees of freedom = 1,756

Table IVB-SI-C4

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Grade by SSCD Involvement Year 2

Cognitive Outcomes	F^a	p
References	11.51	.001
Math Problem Solving	3.75	.053
Fluency	1.53	.216
Flexibility	0.29	.591
Originality	0.81	.369
Unlikely Things	2.67	.103

[a] Degrees of freedom = 1,756

Table IVB-SI-C5

ANOVA for Student Cognitive Outcomes for Main Effects of SSCD Involvement Year 2

Cognitive Outcomes	F[a]	p
References	14.21	.001
Math Problem Solving	9.00	.003
Fluency	0.12	.732
Flexibility	0.46	.497
Originality	0.82	.366
Unlikely Things	0.11	.735

[a] Degrees of freedom = 1,756

Table IVB-SI-C6

ANOVA for Student Cognitive Outcomes for Main Effects of Income Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
References	44.99	.001	7.75	.006
Math Problem Solving	14.38	.001	0.30	.583
Fluency	0.34	.563	12.19	.001
Flexibility	4.72	.030	11.49	.001
Originality	.61	.435	9.17	.003
Unlikely Things	7.45	.007	.91	.342

[a] Degrees of freedom = 1,756

Table IVB-SI-C7

ANOVA for Student Cognitive Outcomes for Main Effects of Grad
Year 2

Cognitive Outcomes	F[a]	p
References	2.01	.157
Math Problem Solving	.56	.456
Fluency	1.04	.307
Flexibility	2.71	.100
Originality	4.70	.031
Unlikely Things	3.13	.077

[a] Degrees of freedom = 1,756

(b) Data on Affective/Social Outcomes

The distribution of students and classes is shown in Table IVB-SI-1. Two cells have single classes. One of these is in Grade 5 in Medium Income in High SSCD Involvement. On the pretest, this class was low on the SOCL and Giving Help; it tended to be in the middle of its grade and income set on the POQ, IAR, and Getting Help. On the posttest, the class was low on the SOCL, low or near the middle on Giving and Getting Help, and above the mean on the POQ and the IAR.

The other cell with a single class was in Grade 6, High Income, High SSCD Involvement. This class tended to be in the middle or high on both pretest and posttest.

There is no evidence of bias in the selection or data collections for these classes.

The mean scores for individual level analyses are shown in Table IVB-SI-A1.

The MANOVA results for both individual and class level analyses are shown in Table IVB-SI-A2. The pattern of results is quite similar for both sets. The Income by SSCD Involvement interaction is significant in both sets for the High by Medium plus Low Income contrast. The main effect of Income for the Medium by Low Income contrast is clearly significant in the individual level analyses and very nearly so for the class level. The pattern of means is very similar.

The remainder of the discussion will be based on individual level analyses.

The only significant interaction is between Income (High by Medium plus Low Income contrast) and SSCD Involvement. The univariate data are in Table IVB-SI-A3. Those results show that the effect was significant for the POQ, the IAR, and for Giving and Getting Help. Examination of the means indicates that students in High Income schools have higher outcomes on the POQ and the IAR in classes low in SSCD Involvement, while there is probably no difference for students in Medium and Low Income schools on those outcomes. Students in High Income schools have higher outcomes on Giving Help and Getting Help in classes high in SSCD Involvement, while there is probably no difference for students in Medium and Low Income schools.

The only significant main effect is for Income, the Medium by Low Income contrast. The univariate data in Table IVB-SI-C4 show a significant effect on the SOCL and Getting Help. Students in Medium Income schools have higher outcome scores.

To summarize the data on affective/social outcomes, it would be appropriate to say that there is no clear indication that SSCD Involvement makes a difference.

Table IVB-SI-A1

Student Affective/Social Outcome Mean Scores by Grade, Income, and SSCD Involvement
Year 2

Affective/ Social	Income	Means			
		Grade 5		Grade 6	
		SSCD Involvement		SSCD Involvement	
		High	Low	High	Low
SOCL	High	.016	.079	.284	.022
	Medium	-.054	-.027	.091	.253
	Low	-.273	-.005	-.151	-.132
	Unweighted Means	-.104	.016	.074	.048
POQ	High	-.233	.095	.173	.236
	Medium	.451	.019	-.064	-.287
	Low	-.012	-.013	-.019	.119
	Unweighted Means	.069	.033	.030	.023
IAR	High	-.360	.113	-.031	.333
	Medium	.126	-.043	.027	-.083
	Low	.012	-.233	-.018	.002
	Unweighted Means	-.074	-.054	-.007	.084
Giving Help	High	.185	-.031	.144	-.017
	Medium	-.041	.052	-.091	.007
	Low	-.180	.104	.033	-.051
	Unweighted Means	-.012	.042	.028	-.020
Getting Help	High	.224	-.191	.376	.006
	Medium	-.161	.155	-.020	.045
	Low	-.282	-.069	-.019	-.088
	Unweighted Means	-.073	-.035	.113	-.013

Table IVB-SI-A2

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and SSCD Involvement

Year 2

Individual Level Analyses

Source	F[a]	p
Grade	1.71	.130
Income (High X Medium + Low)	.99	.420
(Medium X Low)	3.16	.008
Program	.33	.896
Grade X Program	.23	.950
Income X Program		
(High X Medium + Low)	6.47	.001
(Medium X Low)	.80	.553
Grade X Income X Program		
(High X Medium + Low)	.96	.440
(Medium X Low)	.94	.452

[a] Degrees of freedom = 5,752

Class Level Analyses

Source	F[a]	p
Grade	1.21	.344
Income (High X Medium + Low)	1.91	.140
(Medium X Low)	2.66	.055
Program	.40	.840
Grade X Program	.06	.997
Income X Program		
(High X Medium + Low)	3.03	.034
(Medium X Low)	.42	.832
Grade X Income X Program		
(High X Medium + Low)	.26	.928
(Medium X Low)	.71	.620

[a] Degrees of freedom = 5,19

Table IVB-SI-A3

ANOVA for Student Affective/Social Outcomes for Two-Way Interaction of Income by SSCD Involvement
Year 2

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	1.64	.200	NOT SIGNIFICANT	
POQ	3.93	.048		
IAR	12.67	.001		
Giving Help	6.61	.010		
Getting Help	14.63	.001		

[a] Degrees of freedom = 1,756

Table IVB-SI-A4

ANOVA for Student Affective/Social Outcomes for Main Effects of Income
Year 1

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	NOT SIGNIFICANT		8.37	.004
POQ			.18	.673
IAR			.02	.901
Giving Help			.13	.715
Getting Help			6.40	.012

[a] Degrees of freedom = 1,756

(c) Summary for SSCD Involvement

There is some indication that students in classrooms with High SSCD Involvement have better cognitive outcomes but show no difference on affective/social outcomes.

Thus, it probably would be better to have more SSCD Involvement in many classrooms.

c. Impact of Classroom Success Orientation

Sufficient data to permit analysis on this dimension were obtained only on the Success Schools Classroom Description instrument.

The distribution of students and classes is shown in Table IVB-SO-1.

(1) Data on Cognitive Outcomes

There is one cell in the three-factor design in which there is data from only one class. That is in Grade 5, High Income, High SSCD Success Orientation. On the pretest, that class was low on References, Math Problem Solving, and Unlikely Things in its grade and income set. It was in the middle on Flexibility and high on Fluency and Originality. On the posttest, the class was low on References, in the middle on Math Problem Solving and Unlikely Things, and high on Fluency, Flexibility, and Originality for its grade and income set. On both pretest and posttest, the class tended to be high or in the middle for its grade.

The means data from the individual level analyses are in Table IVB-SO-C1.

The MANOVA results for both individual and class level analyses are in Table IVB-SO-C2. The two sets of analyses provide a quite different picture of the significance of the differences among various factors. At the individual level, every analysis except the three-way interaction of Grade by Income (Medium by Low contrast) by SSCD Success Orientation is significant. At the class level of analysis, only the main effects of Grade and of Income (High by Medium plus Low contrast) are significant. Since the distribution of means is quite similar for both analyses, the differences between the MANOVA results are providing a more stringent test of the effects of the factors.

The remainder of the discussion will be based on the findings from the individual level analyses.

The three-way interaction of Grade, Income (High by Medium plus Low contrast), and SSCD Success Orientation was significant. The univariate data in Table IVB-SO-C3 show the effects were significant for References and for Math Problem Solving (and nearly so for Originality). The means table indicates that, for students in Grade 6, students in High Income schools are likely to have better outcomes in classes low in Success Orientation, while students in Medium and Low Income schools are likely to do better in classes high in Success Orientation. Results for students in Grade 5 are mixed.

The two-way interaction of Income and SSCD Success Orientation is significant for both Income contrasts. The univariate data are in Table IVB-SO-C4. Examining the High by Medium plus Low

Income contrast first, the effect of the interaction is significant for References and Math Problem Solving. Data on means indicates that students in High Income schools are likely to do better on References in low Success Orientation classes, while the opposite is true for students in Medium and Low Income schools. Students in Medium and Low Income schools do better on Math Problem Solving in high Success Orientation classes; there probably is no difference for students in High Income schools.

Data on the contrast of Medium by Low Income is also in Table IVB-SO-C4. The effect is significant for the TTCT measures of creative thinking. Examination of means data indicates that students in Low Income schools have higher outcomes in classes high in Success Orientation, while it does not seem to make a difference for students in Medium Income schools.

There is a significant interaction of Grade and SSCD Success Orientation. Univariate data are in Table IVB-SO-C5. The effect is significant for References and the TTCT measures. The means for References show that students have higher outcomes in Grade 5 in classes low in Success Orientation, while the opposite is true for students in Grade 6. On the TTCT measures, students in Grade 5 do better in classes high in Success Orientation, while there seems to be no effect for students in Grade 6.

Table IVB-SO-C2 shows a significant main effect for SSCD Success Orientation. The univariate data are in Table IVB-SO-C6. The effect is significant for Math Problem Solving and the TTCT measures. Students in classes high in Success Orientation have higher outcomes.

There are also significant main effects for Income, for both contrasts. The univariate data are in Table IVB-SO-C7. The results indicate that students in higher income schools tend to have better outcomes on these cognitive measures.

Grade effects are significant. The univariate data are in Table IVB-SO-C8. The effect is significant for References, Originality and Unlikely Things. Examination of means data show that students in Grade 6 do better on References and Unlikely Things, but that Grade 5 students do better on Originality. It should be noted that the data here reflect change from pretest to posttest, so that Grade 5 students appear to have gained more--not that their posttest scores were necessarily higher than those of Grade 6 students.

To sum up the data on cognitive outcomes, the overall indication is that students are likely to be better off in classes high in Success Orientation. However, there is considerable variation by grade, by income, and by outcome measure.

Table IVB-SO-1

Distribution of Students and Classes by Grade, Income, and SSCD Success Orientation
Year 2

Individual Level Analyses

Income	Grade 5 Success Orientation High	 Low	Grade 6 Success Orientation High	 Low
High	21	94	46	50
Medium	112	73	101	83
Low	52	66	74	28

Class Level Analyses

Income	Grade 5 Success Orientation High	 Low	Grade 6 Success Orientation High	 Low
High	1	4	2	2
Medium	4	3	4	4
Low	3	3	4	2

Table IVB-SO-C1

Student Cognitive Outcome Mean Scores by Grade, Income, and SSCD Success Orientation Year 2

Cognitive Outcomes	Income	Means			
		Grade 5		Grade 6	
		Success Orient.		Success Orient.	
		High	Low	High	Low
References (ITBS)	High	.080	.184	.071	.416
	Medium	-.145	-.008	.234	-.229
	Low	-.125	-.159	-.020	-.273
	Unweighted Mean	-.063	.006	.095	-.029
Math Problem Solving (ITBS)	High	.201	.073	.037	.209
	Medium	-.077	-.033	.121	-.285
	Low	.151	-.058	.037	-.148
	Unweighted Mean	.092	-.006	.065	-.075
Fluency (TTCT)	High	.375	-.065	-.088	.082
	Medium	.197	.179	-.104	.033
	Low	.057	-.436	.036	-.292
	Unweighted Mean	.210	-.108	-.052	-.059
Flexibility (TTCT)	High	.294	-.101	.112	.284
	Medium	.094	.108	.002	-.002
	Low	-.031	-.486	-.065	-.181
	Unweighted Mean	.119	-.160	.017	.034
Originality (TTCT)	High	.367	-.020	-.220	.122
	Medium	.279	.158	-.120	-.059
	Low	.148	-.438	.037	-.354
	Unweighted Mean	.264	-.100	-.100	-.097
Unlikely Things	High	.014	.075	.272	.173
	Medium	-.103	.043	.032	-.090
	Low	-.266	-.187	.068	-.054
	Unweighted Mean	-.118	.023	.124	.009

Table IVB-SO-C2

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and SSCD Success Orientation

Year 2

Individual Level Analyses

Source	F[a]	p
Grade	5.35	.001
Income (High X Medium + Low)	9.37	.001
(Medium X Low)	3.67	.001
Program	2.76	.012
Grade X Program	3.86	.001
Income X Program		
(High X Medium + Low)	4.19	.001
(Medium X Low)	2.74	.012
Grade X Income X Program		
(High X Medium + Low)	3.61	.002
(Medium X Low)	1.85	.087

[a] Degrees of freedom = 6,771

Class Level Analyses

Source	F[a]	p
Grade	5.01	.003
Income (High X Medium + Low)	4.37	.006
(Medium X Low)	1.84	.145
Program	.79	.589
Grade X Program	1.27	.317
Income X Program		
(High X Medium + Low)	1.69	.179
(Medium X Low)	.60	.724
Grade X Income X Program		
(High X Medium + Low)	.89	.519
(Medium X Low)	.53	.777

[a] Degrees of freedom = 6,19

Table IVB-SO-C3

ANOVA for Student Cognitive Outcomes for Three-Way Interaction of Grade, Income, and SSCD Success Orientation
Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
References	13.57	.001	NOT SIGNIFICANT	
Math Problem Solving	8.34	.004		
Fluency	2.81	.094		
Flexibility	3.02	.083		
Originality	3.46	.063		
Unlikely Things	.21	.648		

[a] Degrees of freedom = 1,776

Table IVB-SO-C4

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income and SSCD Success Orientation
Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
References	12.95	.001	.41	.521
Math Problem Solving	4.21	.041	.00	.962
Fluency	.03	.862	15.15	.001
Flexibility	.01	.925	4.89	.027
Originality	2.48	.116	11.50	.001
Unlikely Things	.03	.858	.16	.686

[a] Degrees of freedom = 1,776

Table IVB-SO-C5

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Grade and SSCD Success Orientation
Year 2

Cognitive Outcomes	F[a]	p
References	10.08	.002
Math Problem Solving	1.99	.159
Fluency	7.01	.008
Flexibility	5.02	.025
Originality	8.00	.005
Unlikely Things	3.05	.081

[a] Degrees of freedom = 1,776

Table IVB-SO-C6

ANOVA for Student Cognitive Outcomes for Main Effects of SSCD Success Orientation
Year 2

Cognitive Outcomes	F[a]	p
References	1.23	.267
Math Problem Solving	8.88	.003
Fluency	5.53	.019
Flexibility	3.98	.046
Originality	7.51	.006
Unlikely Things	0.14	.708

[a] Degrees of freedom = 1,776

Table IVB-SO-C7

ANOVA for Student Cognitive Outcomes for Main Effects of Income Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
References	37.67	.001	3.52	.061
Math Problem Solving	13.77	.001	1.94	.164
Fluency	0.66	.415	12.72	.001
Flexibility	5.60	.018	13.64	.001
Originality	.60	.440	8.44	.004
Unlikely Things	8.73	.003	0.78	.379

[a] Degrees of freedom = 1,776

Table IVB-SO-C8

ANOVA for Student Cognitive Outcomes for Main Effects of Grade Year 2

Cognitive Outcomes	F^a	p
References	4.63	.032
Math Problem Solving	.27	.601
Fluency	2.38	.123
Flexibility	.87	.350
Originality	7.81	.005
Unlikely Things	3.94	.048

[a] Degrees of freedom = 1,776

(2) Data on Affective/Social Outcomes

There is one cell in the three-factor design in which there is data from only one class. It is in Grade 5, High Income, High SSCD Success Orientation. That class tended to be in the middle of its grade and income set on the pretest. On the posttest, it tended to be in the middle on the SOCL, Giving Help, and Getting Help. It was low on the POQ and the IAR on the posttest.

The means data from the individual level analyses are in Table IVB-SO-A1.

The MANOVA results for both individual and class level analyses are in Table IVB-SO-A2. Both sets of analyses produce similar results. Only the main effect of Income (the Medium by Low Income contrast) is significant.

The remainder of the discussion will be based on the individual level analyses.

The univariate data for the Income main effect are in Table IVB-SO-A3. They indicate that the effect is significant for the SOCL and Getting Help. Students in Medium Income schools are likely to have higher gains on those two measures than students in Low Income schools.

Summarizing the data on affective/social outcomes for Success Orientation, there is nothing to indicate that having a high or low Success Orientation, as measured by the SSCD, will benefit or reduce those outcomes.

(3) Summary for SSCD Success Orientation

Students may benefit more on cognitive outcomes in classes high in Success Orientation. There does not appear to be a clear impact on affective/social outcomes.

Table IVB-SO-A1.

Student Affective/Social Outcome Mean Scores by Grade, Income, and SSCD Success Orientation
Year 2

Affective/ Social	Income	Means			
		Grade 5		Grade 6	
		Success Orientation		Success Orientation	
		High	Low	High	Low
SOCL	High	-.055	.082	.029	.154
	Medium	.033	-.128	.108	.187
	Low	-.332	-.056	-.151	-.132
	Unweighted Means	-.118	-.034	-.005	.070
POQ	High	-.476	.083	.131	.218
	Medium	.143	-.042	.027	-.336
	Low	-.019	-.007	-.019	.119
	Unweighted Means	-.117	.012	.047	.000
IAR	High	-.509	.051	.269	.165
	Medium	.021	-.090	.042	-.070
	Low	-.019	-.119	-.018	.002
	Unweighted Means	-.169	-.053	.097	.032
Giving Help	High	-.012	.056	.151	-.021
	Medium	.067	-.000	-.108	.001
	Low	-.067	-.088	.033	-.051
	Unweighted Means	-.004	-.011	.025	-.024
Getting Help	High	.134	-.087	.123	.026
	Medium	.106	.135	-.028	.037
	Low	-.270	-.156	-.019	-.088
	Unweighted Means	-.010	-.036	.025	-.009

Table IVB-SO-A2

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and SSCD Success Orientation
Year 2

Individual Level Analyses

Source	F[a]	p
Grade	1.62	.152
Income (High X Medium + Low)	1.48	.194
(Medium X Low)	3.57	.004
Program	.90	.483
Grade X Program	.14	.983
Income X Program	1.81	.109
(High X Medium + Low)	1.73	.126
(Medium X Low)		
Grade X Income X Program		
(High X Medium + Low)	1.18	.316
(Medium X Low)	.96	.440

[a]Degrees of freedom = 5,772

Class Level Analyses

Source	F[a]	p
Grade	1.31	.298
Income (High X Medium + Low)	2.19	.096
(Medium X Low)	3.13	.030
Program	.64	.673
Grade X Program	.13	.984
Income X Program		
(High X Medium + Low)	1.02	.433
(Medium X Low)	.85	.529
Grade X Income X Program		
(High X Medium + Low)	1.30	.305
(Medium X Low)	.62	.684

[a]Degrees of freedom = 5,20

Table IVB-SO-A3

ANOVA for Student Affective/Social Outcomes for Main Effects of Income Year 2

Affective/Social Outcomes	High X Medium + Low Income F^a	High X Medium + Low Income p	Medium X Low Income F^a	Medium X Low Income p
SOCL			10.45	.001
POQ			.13	.720
IAR	NOT SIGNIFICANT		.13	.721
Giving Help			.30	.583
Getting Help			7.13	.008

[a] Degrees of freedom = 1,776

d. Data Regarding SWF Classroom Characteristics Combined

(1) Data Obtained with the SSCD

All of the data obtained with the SSCD were examined to identify classes which were high or low from an overall perspective. Some classes could not be so categorized. These analyses were based on data from 28 classes. The data from three observers on all of the dimensions were utilized in making the categorization. For further information on this categorization, see section IV.B.6.a.(2). The term which will be used for this analysis is SSCD Over-all.

The distribution of students and classes for these analyses is provided in Table IVB-ST-1. There is one empty cell in the three factor design. It is in Grade 6 in High Income in Low SSCD Over-all.

(a) Data on Cognitive Outcomes

There are three single-class cells. One is in Grade 5 in High Income in High SSCD Over-all. On the pretest, that class was low on References, Math Problem Solving, and Unlikely Things in its grade and income set. It was in the middle on Flexibility and high on Fluency and Originality. On the posttest, the class was low on References, in the middle on Math Problem Solving and Unlikely Things, and high on Fluency, Flexibility, and Originality for its grade and income set. On both pretest and posttest, the class tended to be high or in the middle for its grade.

The second single-class cell is in Grade 5, Middle Income, High SSCD Over-all. On the pretest, this class was generally low in its grade and income set. On the posttest, it was either at the middle or low in its grade and low in its grade and income set.

The third single-class cell is in Grade 5 in Low Income in low SSCD Over-all. On the pretest, this class tended to be in the middle or low in its grade and income set and low in its grade. On the posttest, it was low in its grade and income set, except on References and Math Problem Solving, on which it was in the middle for its grade and income set.

The means for the individual level analyses are in Table IVB-ST-C1.

The MANOVA results for both individual and class level analyses are in Table IVB-ST-C2. While there are several significant results at the individual level, only the main effects of Grade are significant at the class level.

The remainder of the discussion will be based on individual level analyses. The two-way interaction of Income (Medium by Low Income contrast) and SSCD Over-all is significant. The univariate results are in Table IVB-ST-C3. The effects of the interaction are significant for the TTCT measures. Examination of the means table indicates that students in Medium Income schools appear to have higher outcomes if they are in classes low in SSCD Over-all, while Low Income school students do better in classes high in SSCD Over-all.

As shown in Table IVB-ST-C2, there is a significant main effect for SSCD Over-all. The univariate data are in Table IVB-ST-C4. They show a significant effect for References and Math Problem Solving. Examination of the means indicates that students in classes high in SSCD Over-all have better outcomes.

Grade also has a significant main effect. The univariate data are in Table IVB-ST-C5. They show a significant main effect for Originality and Unlikely Things. Grade 5 is higher in Originality; Grade 6 is higher in Unlikely Things.

To sum up the cognitive outcomes, the results are mixed and suggest that Low Income school students appear to be better off in high SSCD Over-all classes. Middle Income school students do better on the TTCT in low SSCD Over-all classes. Those main effects of SSCD Over-all which are significant favor the classrooms high in those characteristics. Thus, there is weak support for having teachers implement those activities which reflect SWF characteristics.

Table IVB-ST-1

Distribution of Students and Classes for Cognitive Outcomes by Grade, Income, and SSCD Over-all
Year 2

Individual Level Analyses

Income	Grade 5 SSCD Over-all High	Grade 5 SSCD Over-all Low	Grade 6 SSCD Over-all High	Grade 6 SSCD Over-all Low
High	21	94	46	0
Medium	22	81	77	60
Low	76	23	74	28

Class Level Analyses

Income	Grade 5 SSCD Over-all High	Grade 5 SSCD Over-all Low	Grade 6 SSCD Over-all High	Grade 6 SSCD Over-all Low
High	1	4	2	0
Medium	1	3	3	3
Low	4	1	4	2

Table IVB-ST-C1

Student Cognitive Outcome Mean Scores by Grade, Income, and SSCD Over-all Year 2

Cognitive Outcomes	Income	Means			
		Grade 5 SSCD Over-all		Grade 6 SSCD Over-all	
		High	Low	High	Low
References (ITBS)	High	.080	.184	.071	0
	Medium	-.132	-.083	.120	-.257
	Low	-.137	-.247	-.020	-.273
	Unweighted Mean	-.063	-.049	.057	-.265
Math Problem Solving (ITBS)	High	.201	.073	.037	0
	Medium	-.055	-.068	.122	-.272
	Low	.101	-.191	.037	-.148
	Unweighted Mean	.083	-.062	.065	-.210
Fluency (TTCT)	High	.375	-.065	-.088	0
	Medium	-.123	.217	-.075	.144
	Low	-.086	-.378	.036	-.292
	Unweighted Mean	.055	-.076	-.042	-.074
Flexibility (TTCT)	High	.294	-.101	.112	0
	Medium	-.202	.098	-.102	.121
	Low	-.131	-.558	-.065	-.181
	Unweighted Mean	-.013	-.187	-.018	-.030
Originality (TTCT)	High	.367	-.020	-.220	0
	Medium	.010	.274	-.160	.088
	Low	.016	-.393	.037	-.354
	Unweighted Mean	.131	-.046	-.114	-.133
Unlikely Things	High	.014	.075	.272	0
	Medium	-.166	-.151	.086	-.027
	Low	-.145	-.402	.068	-.054
	Unweighted Mean	-.099	-.160	.142	-.041

Table IVB-ST-C2

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and SSCD Over-all
Year 2
Individual Level Analyses

Source	F[a]	p
Grade	5.60	.001
Income ~~(High X Medium + Low)~~ (Medium X Low)	1.97	.068
Program	2.60	.017
Grade X Program	1.78	.102
Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	2.57	.018
Grade X Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	1.00	.425

[a] Degrees of freedom = 6,575

Class Level Analyses

Source	F[a]	p
Grade	4.93	.009
Income ~~(High X Medium + Low)~~ (Medium X Low)	.90	.525
Program	.36	.891
Grade X Program	.82	.577
Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	.46	.827
Grade X Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	.28	.935

[a] Degrees of freedom = 6,12

Table IVB-ST-C3

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income by SSCD Over-all
Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
References	EMPTY CELL		.10	.748
Math Problem Solving			.03	.854
Fluency			13.69	.001
Flexibility			8.29	.004
Originality			13.90	.001
Unlikely Things			.75	.387

[a] Degrees of freedom = 1,580

Table IVB-ST-C4

ANOVA for Student Cognitive Outcomes for Main Effects of SSCD Over-all
Year 2

Cognitive Outcomes	F[a]	p
References	4.74	.030
Math Problem Solving	13.42	.001
Fluency	.09	.768
Flexibility	.16	.687
Originality	.17	.684
Unlikely Things	1.05	.307

[a] Degrees of freedom = 1,580

Table IVB-ST-C5

ANOVA for Student Cognitive Outcomes for Main Effects of Grade
Year 2

Cognitive Outcomes	F^a	p
References	.03	.860
Math Problem Solving	2.63	.106
Fluency	.46	.498
Flexibility	.63	.429
Originality	5.85	.016
Unlikely Things	6.86	.009

[a] Degrees of freedom = 1,580

(b) Data on Affective/Social Outcomes

There are three single-cell classes. One is in Grade 5, High Income, High SSCD Over-all. This class tended to be in the middle of its grade and income set on the pretest. On the posttest, it tended to be in the middle on the SOCL, Giving Help, and Getting Help. It was low on the POQ and the IAR on the posttest.

The second single-class cell is in Grade 5, Middle Income, High SSCD Over-all. This class tended to be low in its grade and income set on the pretest on the SOCL and on Giving Help. It tended to be in the middle on the POQ, the IAR, and Getting Help. On the posttest, this class was low for its grade and income set on the SOCL, Giving Help, and Getting Help. It was in the middle of its grade on those measures. It was high in its grade and income set and in the middle for its grade on the POQ. It was in the middle of its grade and income set on the IAR.

The third class is in Grade 5 in Low Income in low SSCD Over-all. It was high on the pretest in its grade and income set and in its grade on the SOCL. It was in the middle of its grade and income set on the POQ, Giving Help, and the IAR. It was low on Getting Help. On the posttest, this class was low on the POQ and the IAR, in the middle on Getting Help, and high on the SOCL and Giving Help.

The means based on individual level analyses for the affective/social outcomes are in Table IVB-ST-A1.

The MANOVA results for both individual and class level analyses are in Table IVB-ST-A2. The two sets are similar except that the Income main effect is significant in the individual level analyses. The remainder of the discussion will be based on the individual level analyses.

As indicated in Table IVB-ST-A2, none of the interactions is significant, and SSCD Over-all is not. Income (the Medium by Low Income contrast) is significant. The univariate results are in Table IVB-ST-A3. The SOCL is significantly affected. Medium Income school students have higher scores.

There is a main effect for Grade. The univariate data are in Table IVB-ST-A4. The effect is significant for the SOCL. Students in Grade 6 are likely to have better outcomes.

Summing up the results for the affective/social data, there does not seem to be evidence that SSCD Over-all has an effect on student outcomes.

Table IVB-ST-A1

Student Affective/Social Outcome Mean Scores by Grade, Income, and SSCD Over-all
Year 1

Affective/ Social	Income	Means			
		Grade 5		Grade 6	
		SSCD Over-all		SSCD Over-all	
		High	Low	High	Low
SOCL	High	-.055	.082	.029	0
	Medium	-.054	-.029	.139	.224
	Low	-.273	-.162	-.151	-.132
	Unweighted Means	-.127	-.036	.006	.046
POQ	High	-.476	.083	.131	0
	Medium	.451	.050	-.074	-.441
	Low	-.012	-.190	-.019	.119
	Unweighted Means	-.012	-.019	.013	-.161
IAR	High	-.509	.051	.269	0
	Medium	.126	-.187	.051	-.063
	Low	.012	-.327	-.018	.002
	Unweighted Means	-.124	-.155	.100	-.030
Giving Help	High	-.012	.056	.151	0
	Medium	-.041	.116	-.002	.003
	Low	-.180	.136	.033	-.051
	Unweighted Means	-.077	.103	.061	-.024
Getting Help	High	.134	-.087	.123	0
	Medium	-.161	.157	.020	.002
	Low	-.282	.078	-.019	-.088
	Unweighted Means	-.103	.049	.041	-.043

Table IVB-ST-A2

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and SSCD Over-all

Year 2

Individual Level Analyses

Source	F[a]	p
Grade	2.51	.029
Income ~~(High X Medium + Low)~~ (Medium X Low)	2.38	.037
Program	1.03	.401
Grade X Program	1.58	.164
Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	.43	.827
Grade X Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	.21	.956

[a]Degrees of freedom = 5,576

Class Level Analyses

Source	F[a]	p
Grade	2.98	.052
Income ~~(High X Medium + Low)~~ (Medium X Low)	2.41	.094
Program	.79	.573
Grade X Program	.30	.907
Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	.54	.742
Grade X Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	.30	.907

[a]Degrees of freedom = 5,13

Table IVB-ST-A3

ANOVA for Student Affective/Social Outcomes for Main Effects of Income
Year 2

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
SOCL			9.87	.002
POQ			.01	.905
IAR	EMPTY CELL		.00	.960
Giving Help			.80	.371
Getting Help			2.99	.084

[a] Degrees of freedom = 1,580

Table IVB-ST-A4

ANOVA for Student Affective/Social Outcomes for Main Effects of Grade
Year 2

Affective/Social Outcomes	F^a	p
SOCL	4.27	.039
POQ	2.79	.096
IAR	2.56	.110
Giving Help	.79	.374
Getting Help	1.24	.266

[a] Degrees of freedom = 1,580

(c) Summary for SSCD Over-all

There is some indication that students benfit more on cognitive outcomes in classes high in SWF classroom characteristics, as measured by SSCD Over-all. Those characteristics do not seem to affect affective/social outcomes.

(2) Data Obtained with the RCS

The Reciprocal Category System is based on verbal interaction only. As explained in section IV.A.3. (Measurement Development), it was possible to utilize items in this system to produce measures of four of the five classroom dimensions: Involvement, Responsibility, Thinking, and Success Orientation.

As explained above in section IV.B.6.a.(1), data from the RCS in Year 2 did not permit analysis of individual SWF dimensions. However, it was possible to utilize available data to develop an SWF Over-all score for most of the classrooms. The method of computing this score is explained in that same section.

The score for RCS Over-all was used to categorize classrooms as high or low on the extent to which SWF classroom characteristics were exhibited. No classes were eliminated because of inability to categorize on this score. These analyses were based on data from 35 classes.

The distribution of students and classes for these analyses is provided in Table IVB-RT-1.

(a) Data on Cognitive Outcomes

There are two single-class cells. One is in Grade 5 in Medium Income in High RCS Over-all. This class tended to be in the middle of its grade and income set on the pretest and on the posttest on the cognitive measures, except on References on which it was high, and on Math Problem Solving on which it was high on the posttest.

The other single-class cell is in Grade 6 in High Income in low RCS Over-all. This class was low on References and Math Problem Solving and high on the other measures on the pretest. On the posttest, it was low on References, high on Flexibility, and in the middle on the rest.

There is no evidence of any bias in the selection of these classes nor in data collection in them.

The means from the individual level analyses are provided in Table IVB-RT-C1.

The MANOVA results for both the individual and class levels of analysis are in Table IVB-RT-C2. Every analysis, except that for Grade by RCS Over-all, is significant in the individual level analyses. At the class level, those significant are the main effects of Grade and Income (the High by Medium plus Low contrast), and the three-way interaction of Grade by Income (the High by Medium plus Low contrast) by RCS Over-all. The pattern of means for the two sets of analyses is similar. Thus, the class level analysis is the more severe test.

The remainder of the discussion will be based on the individual level analyses. The three-way interaction of Grade, Income, and RCS Over-all was significant for both income contrasts. Univariate data for these analyses are in Table IVB-RT-C3. For the High by Medium plus Low Income contrast, the effect of the interaction is significant for Fluency and Originality. Examination of the means table indicates students in High Income schools had essentially opposite results at the two grade levels, Grade 5 students doing better in low RCS Over-all classes while Grade 6 students did better in high RCS Over-all classes. For Medium Income school students, there seemed to be no difference. For Low Income school students, the effects were opposite those for High Income school students. Turning to the Medium by Low Income contrast, the discussion above of the means at those two levels explains the results. These results suggest no consistent pattern upon which statements can be made about the effects of the classroom characteristics as reflected in the RCS Over-all.

The Income by RCS Over-all interaction is also significant on both income contrasts. The univariate data are in Table VIB-RT-C4. The effect for the High by Medium plus Low Income contrast is significant for Math Problem Solving and Unlikely Things and very close for References. On Problem Solving, it appears that students in High Income schools are likely to have no difference (in Grade 5) or do better (Grade 6) in classrooms low in RCS Over-all, while students in Medium and Low Income schools are likely to do better in classes high in RCS Over-all. For Unlikely Things, students in High Income schools appear to have higher outcomes in classrooms high in RCS Over-all; the results are much more mixed for students in Medium and Low Income schools. Turning to the Medium by Low Income contrast, the effects are significant for all outcomes except Unlikely Things. On References and Math Problem Solving, students in Medium Income schools appear to benefit by being in classrooms high on RCS Over-all, while it does not appear to make a difference for students in Low Income schools. On the TTCT measures, students in Medium Income schools appear to do better in low RCS Over-all classes, while the opposite appears true for students in Low Income schools.

The Grade by RCS Over-all interaction is not significant.

The main effect of RCS Over-all is significant. The univariate results are in Table IVB-RT-C5. It indicates the effect is significant for Math Problem Solving and very nearly so for References. For both variables, students in classrooms high in SWF classroom characteristics, as measured by the RCS Over-all score, do better.

The main effect of income is significant for both income contrasts. The univariate results are in Table IVB-RT-C6. They indicate that students in higher income schools tend to have higher cognitive outcomes.

The main effect for Grade is also significant. The univariate results are in Table IVB-RT-C7. The effect is significant only for Originality. Students in Grade 5 do better. It is important to remember that the analyses for Year 2 are based on residual gain scores. Thus, this finding means that students in Grade 5 gained more on Originality than students in Grade 6, not that they had higher posttest scores.

To sum up, there are contradictory results among the findings, in that sometimes students in low RCS Over-all classes have higher scores. However, the main effect for RCS Over-all was significant, and the variables on which the effect was significant indicated that students did better in high RCS Over-all classrooms. There is limited support for seeing benefits in students being in them.

Table IVB-RT-1

Distribution of Students and Classes by Grade, Income, and RCS Over-all

Year 2

Individual Level Analyses

Income	Grade 5 RCS Over-all High	Grade 5 RCS Over-all Low	Grade 6 RCS Over-all High	Grade 6 RCS Over-all Low
High	68	47	72	24
Medium	24	161	97	87
Low	52	66	64	38

Class Level Analyses

Income	Grade 5 RCS Over-all High	Grade 5 RCS Over-all Low	Grade 6 RCS Over-all High	Grade 6 RCS Over-all Low
High	3	2	3	1
Medium	1	6	4	4
Low	3	3	4	2

Table IVB-RT-C1

Student Cognitive Outcome Mean Scores by Grade, Income, and RCS Over-all
Year 2

Cognitive Outcomes	Income	Means			
		Grade 5		Grade 6	
		RCS Over-all		RCS Over-all	
		High	Low	High	Low
References (ITBS)	High	.115	.236	.255	.237
	Medium	.058	-.113	.199	-.168
	Low	-.125	-.159	-.128	-.025
	Unweighted Mean	.016	-.012	.109	.015
Math Problem Solving (ITBS)	High	.112	.075	.074	.286
	Medium	.169	-.094	.157	-.307
	Low	.151	-.058	-.004	-.030
	Unweighted Mean	.144	-.026	.076	-.017
Fluency (TTCT)	High	-.160	.269	.045	-.131
	Medium	.153	.196	-.057	-.025
	Low	.057	-.436	-.148	.104
	Unweighted Mean	.016	.010	-.054	-.017
Flexibility (TTCT)	High	-.114	.094	.205	.191
	Medium	-.138	.135	-.000	-.001
	Low	-.031	-.486	-.069	-.145
	Unweighted Mean	-.094	-.085	.045	.015
Originality (TTCT)	High	-.123	.302	.009	-.194
	Medium	.219	.233	-.097	-.087
	Low	.148	-.438	-.212	.169
	Unweighted Mean	.081	.032	-.100	-.038
Unlikely Things	High	.206	-.142	.291	.009
	Medium	-.143	-.030	.101	-.161
	Low	-.266	-.187	.005	.084
	Unweighted Mean	-.067	-.120	.132	-.023

Table IVB-RT-C2

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and RCS Over-all
Year 2

Individual Level Analyses

Source	F[a]	p
Grade	4.34	.001
Income (High X Medium + Low)	6.63	.001
(Medium X Low)	3.40	.003
Program	3.38	.003
Grade X Program	.92	.482
Income X Program		
(High X Medium + Low)	3.36	.003
(Medium X Low)	4.15	.001
Grade X Income X Program		
(High X Medium + Low)	3.12	.005
(Medium X Low)	2.96	.007

[a] Degrees of freedom = 6,771

Class Level Analyses

Source	F[a]	p
Grade	6.34	.001
Income (High X Medium + Low)	5.10	.003
(Medium X Low)	1.91	.131
Program	1.31	.299
Grade X Program	1.38	.274
Income X Program		
(High X Medium + Low)	1.15	.372
(Medium X Low)	2.28	.080
Grade X Income X Program		
(High X Medium + Low)	3.26	.023
(Medium X Low)	.62	.712

[a] Degrees of freedom = 6,19

Table IVB-RT-C3

ANOVA for Student Cognitive Outcomes for Three-Way Interaction of Grade by Income by RCS Over-all
Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
References	.12	.726	2.88	.090
Math Problem Solving	1.13	.288	3.62	.057
Fluency	10.40	.001	9.95	.002
Flexibility	.96	.327	5.78	.017
Originality	10.89	.001	12.39	.001
Unlikely Things	1.42	.234	1.96	.162

[a] Degrees of freedom = 1,776

Table IVB-RT-C4

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income by RCS Over-all
Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
References	3.57	.059	10.85	.001
Math Problem Solving	9.73	.002	5.25	.022
Fluency	2.42	.120	5.21	.023
Flexibility	0.70	.405	9.76	.002
Originality	2.01	.156	3.82	.051
Unlikely Things	4.87	.028	0.48	.489

[a] Degrees of freedom = 1,776

Table IVB-RT-C5

ANOVA for Student Cognitive Outcomes for Main Effects of
RCS Over-all
Year 2

Cognitive Outcomes	F[a]	p
References	3.66	.056
Math Problem Solving	15.91	.001
Fluency	.55	.460
Flexibility	.01	.903
Originality	.21	.644
Unlikely Things	3.09	.079

[a] Degrees of freedom = 1,776

Table IVB-RT-C6

ANOVA for Student Cognitive Outcomes for Main Effects
of Income
Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
References	20.24	.001	4.75	.030
Math Problem Solving	4.00	.046	.41	.522
Fluency	.40	.529	11.38	.001
Flexibility	4.41	.036	13.00	.001
Originality	.16	.692	7.72	.006
Unlikely Things	6.13	.014	1.43	.233

[a] Degrees of freedom = 1,776

Table IVB-RT-C7

ANOVA for Student Cognitive Outcomes for Main Effects of Grade Year 2

Cognitive Outcomes	F^a	p
References	2.70	.101
Math Problem Solving	1.63	.202
Fluency	.94	.333
Flexibility	1.43	.233
Originality	4.86	.028
Unlikely Things	2.15	.143

[a] Degrees of freedom = 1,776

(b) Data on Affective/Social Outcomes

There are two single-class cells. One is in Grade 5 in Medium Income in High RCS Over-all. This class was in the middle of its grade and income set on all affective/social outcomes except the POQ, on which it is high, on the pretest. On the posttest, this class was high on the SOCL, the POQ, and Getting Help. It was in the middle on Giving Help, and it was low on the IAR.

The other single-class cell is in Grade 6 in High Income in Low RCS Over-all. On the pretest, this class was high on the SOCL, in the middle on the POQ and IAR, and Low on Giving Help and Getting Help, in its grade and income set. On the posttest, it was in the middle on the SOCL, the POQ, and the IAR. It was low on Giving Help and Getting Help.

There is no evidence of bias in the selection or data collection in these classes.

The mean scores based on individual level analyses are in Table IVB-RT-A1.

The MANOVA results for both individual and class level analyses are in Table IVB-RT-A2. There are two differences between those sets of results. At the individual level, the Income (High by Medium plus Low income contrast) by RCS Over-all interaction is significant. The second difference is that the main effect of Income (High by Medium plus Low Income contrast) is significant in the class level analysis. On the latter difference, an examination of the means for the three income levels, for the individual and for the class level analyses, shows that the means are quite similar. Thus, the differences arise from differences in variance in the two sets of analyses. The variance must be much smaller in the class level analyses.

The remainder of the discussion will be based on the individual level analyses.

There is a significant interaction between Income (High by Medium plus Low Income contrast) and RCS Over-all. The univariate data are in Table IVB-RT-A3. The effect is significant for the POQ and the IAR. Examination of the means indicates that students in High Income schools are likely to do better in classes in which there is less emphasis on SWF characteristics; students in Medium and Low Income schools either show no differences between high or low RCS Over-all or appear to do better in classes high in RCS Over-all. These results do not provide clear guidance for decisions about program implementation.

The other significant MANOVA result was the main effect of Income, the Medium by Low Income contrast. The univariate data are in Table IVB-RT-A4. The effect is significant for the SOCL and Getting Help. Students in Medium Income schools have better outcomes.

Summing up the affective/social analyses, there is not clear evidence to support the view that the SWF classroom characteristics combined, as measured by the RCS, have a significant effect on student affective/social outcomes.

(c) Summary for RCS Over-all

There was some indication that RCS Over-all had positive benefits for students on cognitive outcomes, but none for affective/social outcomes. On balance, there is a slight indication that students would be better off in classes in which SWF characteristics are present.

Table IVB-RT-A1.

Student Affective/Social Outcome Mean Scores by Grade,
Income, and RCS Over-all
Year 2

Affective/ Social	Income	Means			
		Grade 5		Grade 6	
		RCS Over-all		RCS Over-all	
		High	Low	High	Low
SOCL	High	.039	.083	.121	.014
	Medium	.240	-.070	.097	.196
	Low	-.332	-.056	-.173	-.099
	Unweighted Means	-.018	-.015	.015	.037
POQ	High	-.232	.289	.146	.269
	Medium	.574	-.005	-.051	-.233
	Low	-.019	-.007	.017	.024
	Unweighted Means	.108	.074	.037	.019
IAR	High	-.249	.234	.161	.378
	Medium	.010	-.028	.091	-.120
	Low	-.019	-.119	.074	-.158
	Unweighted Means	-.086	.029	.109	.033
Giving Help	High	.068	.009	.149	-.199
	Medium	.186	.019	-.120	.008
	Low	-.067	-.088	.090	-.126
	Unweighted Means	.063	-.020	.040	-.106
Getting Help	High	-.115	.052	.214	-.354
	Medium	.248	.098	-.048	.056
	Low	-.270	-.156	-.075	.025
	Unweighted Means	-.046	-.002	.030	-.091

Table IVB-RT-A2

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and RCS Over-all

Year 2

Individual Level Analyses

Source	F[a]	p
Grade	1.61	.155
Income (High X Medium + Low)	1.37	.233
(Medium X Low)	3.16	.008
Program	.51	.765
Grade X Program	1.98	.080
Income X Program		
(High X Medium + Low)	3.79	.002
(Medium X Low)	1.81	.109
Grade X Income X Program		
(High X Medium + Low)	2.13	.060
(Medium X Low)	1.42	.216

[a] Degrees of freedom = 5,772

Class Level Analyses

Source	F[a]	p
Grade	1.27	.314
Income (High X Medium + Low)	3.04	.034
(Medium X Low)	3.03	.034
Program	.13	.985
Grade X Program	1.22	.337
Income X Program		
(High X Medium + Low)	1.12	.383
(Medium X Low)	1.22	.337
Grade X Income X Program		
(High X Medium + Low)	2.38	.076
(Medium X Low)	1.47	.245

[a] Degrees of freedom = 5,20

Table IVB-RT-A3

ANOVA for Student Affective/Social Outcomes for Two-Way Interaction of Income by RCS Over-all
Year 2

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	.13	.716		
POQ	8.56	.004		
IAR	8.93	.003	NOT SIGNIFICANT	
Giving Help	1.80	.180		
Getting Help	2.73	.099		

[a] Degrees of freedom = 1,776

Table IVB-RT-A4

ANOVA for Student Affective/Social Outcomes for Main Effects of Income
Year 2

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL			9.40	.002
POQ			.16	.691
IAR	NOT SIGNIFICANT		.13	.722
Giving Help			.51	.477
Getting Help			6.48	.011

[a] Degrees of freedom = 1,776

C. Summary for Question 2

The data generally say that students have better outcomes in classrooms which exhibit more SWF conditions and events. The data are stronger for Year 1 in support of the SWF program than they are for Year 2. Given the efforts to improve the SSCD measurement between the years, this finding is puzzling. However, the level of effort invested by the central office of the School District in the SWF program was continually reduced during the period of the study. It may be that there simply was less SWF activity in the classroom. The fact that it was not possible to differentiate enough classrooms in Year 2 on the RCS on Involvement would support such an implication.

V. The Impact of Organizational Variables

A. Year 1

1. Objectives

In Section II.A.2.b. above, the rationale for attention to organizational variables is provided. In addition, the relevance of the four dimensions selected is explained. These four dimensions are Goals, Roles, Rewards, and Problem Solving.

The basic question for this part of the report is:

> Are student outcomes more favorable in schools which are "high" on SWF school organization characteristics than student outcomes in schools "low" on those characteristics, regardless of whether the school staff has participated in the training program?

2. Design

Data were obtained on the school organization characteristics discussed in the introduction. The basic design is a multivariate analysis of variance in which the dependent variables are the cognitive and affective/social student outcome variables discussed above in Section III of this report. Students are divided into two categories (high or low) according to their school's position on the particular organizational variable being examined at the time. The analysis was a three-way analysis with Grade as one factor, Income as a second factor, and school status on the SWF organizational variable as the third factor.

3. Measures

a. Goals

There is disagreement in organizational literature regarding the definition of goals and appropriate ways to measure them. Katz and Kahn (1966) suggest a difference between stated goals and those actually pursued. Perrow (1970) states that organizations have many goals, that they vary over time, that they conflict with each other, and that they provide a route to understanding organizations.

In this project, the position is taken that the goals espoused by the school staffs are the effective goals of the organization.

Furthermore, it is believed that the description of the goals given by the staff is an accurate indicator of them.

In seeking adequate measures, the work of a number of other projects was examined. One approach was that used in the Cooperative Project on Educational Development (Mial, 1967) in the late 1960's. An instrument called Estimates (Lake, 1970) asked respondents to select and rank order the top four objectives from a list of ten. Included in the list are such things as reducing the dropout rate, improving basic skills in the first three grades, increasing motivation and desire to learn, and improving learning opportunities for disadvantaged children. While such an approach would permit differentiation of schools on general educational goals, it would not measure concern about the particular goals of the SWF program.

We therefore concluded that we would need to generate goal statements appropriate to the SWF program. This was done, based on Glasser's book (1969), on various documents used in training courses designed by the Educator Training Center for teachers and principals, and on the content of videotapes and films developed by Glasser and his associates. These statements were reviewed by educators familiar with the SWF program and revised. They were then rated by two senior staff members of the Educator Training Center. These staff members rated each statement for the importance to the SWF program. Those goal statements rated as not mattering much to the SWF program were dropped from the analyses.

From the data collected in the developmental year of the study, the alpha coefficients for the four goal variables were as follows:

Goals for Students	.77
Goals for Teachers	.83
Goals for Faculty	.92
Goals for Parents	.86

To obtain scores, the response categories were weighted as follows:

It is very important that it be done	7
It is important	6
It does not matter much one way or the other	5
It is important that it NOT be done	4
It is very important that it NOT be done	3

In addition, the Educator Training Center staff evaluations of importance were entered by assigning items rated Very Important a weight of 4 and those rated Important a weight of 2. Scores were obtained by multiplying the value of the response alternative (chosen by the respondent) by the Importance weight for each item and summing across items.

b. Roles

The initial intent of the study had been to explore the three roles most directly involved in SWF: student, teacher, principal. The limitations of time and other resources required a reduction. It was decided to drop students.

(1) Role of the Principal

One of the better known studies of the role of the principal was conducted by Gross and Herriott (1965). A number of measures were developed. Best known was Executive Professional Leadership (EPL). Several others which seemed relevant to SWF were social support and managerial support. These had also been used in the COPED project (Lake, 1970).

Also located were instruments used by J. M. Foskett (1967), and Dederick (1973). The work of Halpin (1959) was also reviewed.

It was concluded that the items developed and used by Gross and Herriott were most promosing for the purposes of this research. The concepts their scales claimed to assess were close to SWF, they had been carefully developed, and they were found useful in other research. Gross and Herriott used Guttman scaling procedures and reported reproducibility for the scales as follows (Gross & Herriott, 1965, pp. 30, 196, 198): Executive Professional Leadership — .978, Social Support — .912, and Managerial Support — .908.

Eight additional items were generated to emphasize selected aspects of SWF and role theory. There were, therefore, 38 items to be presented to respondents.

In order to determine appropriateness of the items, two approaches were followed. The items were pretested in another city, and two senior staff members of the ETC were requested to rate the importance of each of the behavioral descriptions (items) to the SWF program. Each of these will be reported in turn.

The staff members of four schools which had participated in the SWF training programs developed by ETC were requested to respond to the instrument. Respondents checked a Likert-type scale indicating the frequency with which their principal engaged in the behaviors. A limited number of those respondents were interviewed regarding the appropriateness of the instrument for looking at activities of principals relevant to the SWF program. They reported that the items were on target.

The data so obtained were analyzed to determine whether differences among the schools were obtained. Differences in descriptions of principals were found. Thus that pretest indicated that the items so selected and developed would be appropriate from that perspective.

Next the items were placed on a form which permitted their being rated in terms of importance "for the effective implementation of SWF philosophy and practices" to the SWF program by Educator Training Center staff members. The rating scale included these categories:

> It is very important that it be done or sought or that it NOT be done or sought
>
> It does not matter much one way or another

Of the 38 items, 12 were rated "It does not matter much one way or another." It was decided to drop these items from the final analysis. The alpha reliability coefficient for all items, that is the total set of 26, was .89. The factor loadings for factor 1 ranged from

.58 to .77, for factor II from .61 to .82, and for factor III from .49 to .67.

The next step in our developmental work was to determine whether the four parts initially built into the instrument remained as separable dimensions. A varimax rotation factor analysis was done of the 26 items, utilizing data collected in the 1974-75 year of the main study. Three main factors were identified as describing principals.

The three factors which emerged provided some support for the four sources from which the items were obtained. However, there was considerable overlap of those sources across the three factors. The decision was made to use the factor analyses as the basis for determining the scores to be used in this project.

Table V-1

Factors Obtained for Principal's Role

Item No.	Item Content	Factor Loading
Factor I: Collaborative, facilitative, performance-oriented:		
1.	Gives teachers the feeling that their work is an "important" activity.	.73
2.	Gets teachers to upgrade their performance standards in their classes.	.65
3.	Gives teachers the feeling that they can make significant contributions to improving the classroom performance of their students.	.74
5.	Makes teachers' meetings a valuable educational activity.	.66
6.	Has constructive suggestions to offer teachers in dealing with their major problems.	.72
7.	Takes a strong interest in my professional development.	.77
9.*	Attempts to reward teachers who are doing an outstanding job.	.73
15.	Maximizes the different skills found in the faculty.	.58
21.	Finds ways for teachers to get together to work on problems.	.66
23.	Involves school staff in decisions regarding innovations to be tried in the school.	.73
24.	Gives praise to staff for outstanding performance only.	.56
25.	Involves teachers in setting policy and procedures for their schools.	.77
36.	Develops a real interest in your welfare.	.64
37.	Develops a "we feeling" in working with others.	.71

Table V-1 (continued)

Item No.	Item Content	Factor Loading
Factor II. Accepting, easy to work with		
10.	Discourages teachers who want to try out new educational ideas.	-.79
14.	Reprimands teachers whose educational ideas disagree with his/her own.	-.82
34.	Puts you at ease when you talk with him/her.	.61
35.	Makes those who work with him/her feel inferior.	-.80
38.	Rubs people the wrong way.	-.64
Factor III. Clear, organized, supportive		
4.	Stresses "political" rather than professional considerations in his/her decisions.	-.50
17.	Helps teachers to understand the sources of important problems they are facing.	.54
18.	Displays a strong interest in improving the quality of the educational program.	.60
19.	Assists and supports teachers in relating to parents.	.54
20.	Makes clear what he/she expects of teachers.	.68
22.	Punishes students who create problems in class.	.49
28.	Runs meetings and conferences in a disorganized fashion.	-.67

*This item was finally dropped because many respondents did not provide usable responses.

As indicated in the table above, the three factors were named: I, Collaborative, facilitative, performance-oriented; II, Accepting, easy to work with; and III, Clear, organized, supportive. Correlations among the factor scores, based on the score for each factor for the second year of data collection were:

	Factor II	Factor III	Total
Factor I	.60	.82	.97
Factor II		.63	.75
Factor III			.90

For each of the three scores so developed, alpha coefficients were computed for the respondents who provided data for all items in the score. Data for both years are provided in Table V-2.

Table V-2

Alpha Coefficients for Principal Role Scores for Data Collected in Two Years

Principal Role	Year 1		Year 2	
	N	Alpha	N	Alpha
Score #1	175	.93	191	.93
Score #2	201	.88	214	.88
Score #3	211	.78	223	.72

Computation of the scores to be used in the final analysis was designed to take into consideration both the response alternatives provided in the measuring instrument and the judgments by ETC staff of the relative importance of the items to the SWF program. Scoring procedures were as follows. The respondents made a choice from the following categoires, with the values indicated:

2	Never
3	Almost never
4	Occasionally
5	Frequently
6	Almost always
7	Always

As discussed above in the section regarding Goals, SWF program experts from the Educator Training Center rated each item for its importance to the program. The ratings they provided were assigned weights, and these were attached to the appropriate items.

The score for each of the three variables (factors) was then computed for each respondent by multiplying the value given the choice made by the respondent by the weight resulting from the ETC rating for each item, and those values were summed across items in the dimension.

In the case of four items, two schools had missing data from approximately one-third of their respondent set. Those respondents were assigned the average of their school average plus the across-school average for the particular item.

One school was dropped from the analysis of the Principal's Role variables because data were missing from more than 25 percent of the respondents in that school.

(2) Roles of the Teacher

Possible approaches to measuring the role of the teacher appeared in the literature. Among those examined with some care were those developed by Biddle, Rosencranz, and Raskin (1963); Clark (1972); Corwin (1965); Duncan (1970); Foskett (1967); Kerlinger (1967); Miles (1972); Sorenson, Husek, and Yu (1963); and Vincent (1970).

It was concluded that none of these measures focused as closely on the teacher behaviors expected by the SWF program as we believed desirable. Consequently, we decided to develop items which were intended to exemplify the activities described in the communications developed by William Glasser and by staff members of the Educator Training Center. (This task was also helpful to the development of the observation procedures developed to describe the classroom. See Part IV.A.3. of this report.) Among the sources examined were:

Schools Without Failure, the book by Glasser.

The Identity Society, also by Glasser.

Materials for the four courses presented by the Educator Training Center, 620, 621, 622, and 623.

Films and videotapes developed regarding the SWF program.

Interviews with teachers, SWF program coordinators, and staff of the Educator Training Center.

A roster of teacher behaviors was then generated, especially regarding five classroom factors: Involvement, Relevance, Responsibility, Thinking, and Success Orientation. The roster of behaviors was subsequently checked with teachers familiar with the SWF program and revised.

These were then reviewed by two staff members of the Educator Training Center and modified in terms of their suggestions. The items were subsequently rated by those staff members on the basis of the importance of the behavior to the SWF program. The procedure was the same as that used with the behaviors of the principal, described above.

The literature regarding roles discusses many ways of operationalizing their description. At the conceptual level, one can consider the behaviors actually engaged in as the appropriate definition. Another case can be made for defining roles as the behaviors expected of persons in a given role. It was decided to obtain data on both definitions by asking respondents to report on the extent to which teachers were doing the activities described and to what extent teachers were expected to do them.

In a pretest on four schools in another city, the responses of school staff members were utilized to compute alpha coefficients to provide estimates of reliability. Only respondents with complete data were included. For the data concerning what teachers were Doing, the alpha was .94 (based on 27 respondents). For data regarding what teachers were Expected To Do, the alpha was .94 (for 20 respondents).

For the data obtained during the first year of the actual study, the alpha coefficients were .94 for Doing (based on complete data from 164 respondents) and .96 for Expected (based on data from 140 respondents). Similar data for the second year produced alphas of .95 for Doing (N = 171) and .97 for Expected (N = 143).

In the original proposal for this project, the intention to measure norms was stated. In their presentation regarding the term, norm, Theodorson & Theodorson (1969, pp. 276-277) write the following:

> A rule or standard of behavior defined by the shared expectations of two or more people regarding what behavior is to be considered socially acceptable. . . . Thus, one's role obligations in

> a social group are defined by that group's social norms . . . Many sociologists regard . . . social roles . . . as normative structures based on shared expectations of behavior.

Katz and Kahn (1966, p. 37) write,

> Norms are the general expectations of a demand character for all role incumbents of a system or subsystem.

From these two statements, it appears that the literature is not in complete agreement whether a norm can apply to a single role or must apply to several.

In any event, the concept of norm tends to carry a loading of "ought," what people think one should do. Given that many people have expectations about the activities of a teacher, it may be appropriate to consider our measure of Expected to capture that part of the concept of norm, insofar as the activities of teachers are concerned. We decided to do no more in the measurement of norms.

c. Rewards

An example in the literature regarding measurement of Rewards was in the Estimates instrument used in the COPED project (Lake, 1970). This instrument asked respondents to rank a series of eight general concepts in terms of how much they "counted" for getting ahead in the school system. Another was in the Jobs and Rewards instrument used by Miles (1972). The latter listed a number of teacher activities and asked respondents to rate how often the activity was rewarded by others.

For the purposes of this project, we wanted the measure to relate to the SWF behaviors proposed for teachers as closely as possible. Therefore, we decided to follow the procedure used by Miles but to have the respondent rate how often the behaviors which teachers were doing or were expected to be doing were praised or rewarded. A five-point, Likert-type scale was used.

In the pre-test conducted in four schools in another city, the alpha coefficient of reliability for Rewards was .95 (for 14 respondents from whom data were complete). In the first year of the study, the coefficient was .98 (on complete data from 124 respondents), for the second year, it was .98 (N = 136).

d. Problem Solving

The final area of measurement of organizational variables is in school faculty problem solving or decision making. One approach reported by Fox et al. (1973) builds on an approach developed by Tannenbaum (1968). This approach asks the respondent to rate the amount of influence various individuals or roles have on decisions regarding specified matters.

A second approach, developed by Miles (Lake, Miles, & Earle, 1973), examines problem-solving and decision-making processes. The respondents are asked to rate how frequently various behaviors, activities, or events occur during staff meetings.

We decided that the second approach was more directly on target for the purposes of determining the extent to which a school faculty could be characterized as a problem solving unit, which was defined as important to the SWF program by Glasser (1969, pp. 117-118).

Miles (Lake, Miles, & Earle, 1973) reported average item, test-retest, reliabilities of .60. On a pretest in another city (conducted as part of the present project), data from 42 respondents provided an alpha of .95.

In work done on the COPED project, Callahan factor-analyzed the data from each of four collections and found quite similar structure across items. We conducted a factor analysis with varimax rotation and also obtained three main factors. Our analysis differed from Callahan's, although there was a fair amount of overlap: three of the seven items in our first factor were together in his Factor III, six of the nine items in our second factor were in his Factor II, and three of the five items in our third factor were in his Factor I. Only one item crossed factors, one of our first factor items coming from his Factor I (rather than III).

The factors from our analysis are listed below in Table V-3.

Table V-3

Factors Obtained for Problem Solving

Item No.	Item Content	Factor Loading
Factor I: Constrained Participation		
13.	People are afraid to be openly critical or make good objections.	.63
16.	The same few people seem to do most of the talking during the meeting.	.66
17.	People hesitate to give their true feelings about problems which are discussed.	.76
22.	People don't seem to care about the meeting, or want to get involved in it.	.57
26.	Many people remain silent.	.68
32.	People feel antagonistic or negative during the meeting.	.71
34.	Solutions and decisions are in accord with the chairman's or leader's point of view, but not necessarily with the members'.	.58
Factor II: Effective, Involved Problem Solving		
1.	When problems come up in the meeting, they are thoroughly explored until everyone understands what the problem is.	.51
7.	The group discusses the pros and cons of several different alternate solutions to a problem.	.60
9.	The average person in the meeting feels that his ideas have gotten into the discussion.	.61
10.	Someone summarizes progress from time to time.	.61
14.	The group discusses and evaluates how decisions from previous meetings worked out.	.57
23.	When the group is thinking about a problem, at least two or three different solutions are suggested.	.61
25.	Some very creative solutions come out of this group.	.55
27.	When conflicts over decisions come up, the group does not avoid them, but really stays with the conflict and works it through.	.57
29.	People give their real feelings about what is happening during the meeting itself.	.58

Table V-3 (continued)

Item No.	Item Content	Factor Loading
Factor III: Disorganized, Low Relevance, Indecision		
3.	People come to the meeting not knowing what is to be presented or discussed.	.51
5.	There are many problems which people are concerned about which never get on the agenda.	.53
11.	Decisions are often left vague -- as to what they are, and who will carry them out.	.51
19.	There is a good deal of jumping from topic to topic -- it's often unclear where the group is on the agenda.	.61
36.	The discussion goes on and on without any decision being reached.	.50

As indicated in the tables, the item loadings on the factors ranged, for factor I, from .57 to .76; for factor II, from .51 to .61; and for factor III, from .50 to .61.

Alpha coefficients were computed for the data for each of the two years of collection, based on data from respondents who provided complete data for all items in a given factor (of the three to be computed). The results are shown below.

Table V-4

Alpha Coefficients for School Faculty
Problem Solving Scores

	Year 1		Year 2	
	N	Alpha	N	Alpha
Score #1	223	.91	235	.90
Score #2	221	.91	227	.89
Score #3	250	.83	252	.83

Correlations among the scores are provided below, based on data from Year 2:

	Score 2	Score 3	Total
Score 1	.70	.69	.91
Score 2		.66	.91
Score 3			.85

The items in each factor provided the data for a score. The alternatives were weighted as follows:

Alternative	Weight
Very infrequently	3
Fairly infrequently	4
Occasionally	5
Fairly frequently	6
Very frequently	7

Scores were computed by summing the weights for each respondent for the set of items in the factor. To obtain the school mean, scores of individuals in that building were used. Missing data were handled as discussed in the other organizational dimensions.

Given the high correlations of each score with the total, shown above, it was decided that the total score would be used in the analyses of the impact of Staff Problem Solving.

4. Sample

At the time that school faculties were approached to participate in the project, it was explained that instructional personnel would be invited to respond to questionnaires about the activities of teachers and principals, goals, and problem solving. Copies of the questionnaire were made available for their examination.

In the spring, during the last half of April and the first week in May, research staff met with the instructional staff in each of the schools participating in the project. The purposes of the project were reviewed and the need for their response to the questionnaires was explained. For the first year, they were told that they would receive $5.00 for completing the questionnaire.

Data from the School District indicated that the number of instructional staff members in the 14 schools was approximately 312. Differences in interpretation by school personnel regarding involvement of part-time people makes the exact count problematic. The error would not be greater than four or five people.

Two hundred eighty-four instruments were returned. Of those, 260 were sufficiently complete to be used in the analyses, which is 83 percent of the total number of teachers. The percent for individual schools ranged from 100 to 68, with the midpoint falling between 82 and 83.

In some cases, respondents omitted responses to some items. A few items, principally in the Rewards dimension, received non-response rates over 25 percent. These items were dropped. In cases where a given respondent omitted responses to as much as 23 percent of the items in a dimension, that respondent was dropped from the analysis of that dimension. When less than 23 percent were omitted, the respondent was given the school mean for the item(s) omitted. If a respondent omitted as much as 23 percent of the items on as many as four of the 13 dimensions, that respondent was dropped from the study.

5. Data Collection

When the principal was approached to invite his/her participation and access to his/her staff members, it was explained that information regarding organizational variables would be collected from her/himself and staff members regarding the organization. A copy of the instrument was left with the principal for examination.

Subsequently, the members of the staff were approached as a group. The project was explained, and their participation in it was requested. It was explained that completion of the questionnaire would take approximately 45 minutes to an hour and that they would be paid for their time. Copies of the instrument were available for them to examine.

In April of the first year of the project, the staffs of the participating schools were requested to meet briefly to initiate the data collection. Senior staff members of the project went to these meetings, explained the task, invited questions, and set times for the instruments to be returned. After the explanation, the questionnaires were distributed and a time set for picking them up. Each questionnaire was in a separate envelope without identification, and no identification was placed on the questionnaire. All were asked to sign a separate sheet that they understood that their participation was voluntary.

Research staff returned to the schools, picked up the completed questionnaires, and paid the respondents. Questionnaires were then given a school identification number and put into the data processing system. A problem which arose around data collection was that some staff members found it difficult to respond to some questions. For a fuller discussion of how this problem was handled, see Section V.A.3. above.

6. Results

a. Impact of Organizational Goals

In the data for the first year, scores were generated for each of the following goal areas: Goals for Students, Goals for Teachers, Goals for School Staff, and Goals for Parents. A one-way analysis of variance across schools was run on each of these dimensions. The ANOVA for Goals for Students produced a significant difference among the schools, as did Goals for School Staff. Economic considerations required us to limit our analyses, and it was decided to use the Goals for Students data.

The scores for each of the schools were arrayed from high to low, and the schools were split into High and Low categories utilizing a split as near the middle of the distribution as possible. The difference between the mean Goals for Students scores of the two groups was tested and was found significant.

Scores of students were then allocated to the three-factor design according to the position of their school on the Goals for Students score and the Grade and Income categories as before

(1) Data on Cognitive Outcomes

Cognitive outcomes will be considered first. The data were processed in the Multivariance program with Grade, Income and Goals for Students as factors. Table VA-G-C1 provides the distribution of students and classes according to those factors. The distribution of students is also reflecting the fact that it appears that staff members in High Income schools are more likely to place higher importance on SWF Goals for Students than staff members in Medium and Low Income schools. This seems especially true for Medium Income schools. Data are not available to explain this finding. Given that the results reported to date do not indicate the Medium and Low Income students regularly do better in schools which are low on SWF variables, the views of faculty members must be related to other issues.

There are three cells in which a single class represents that combination of factors. They will be discussed in turn. In Grade 4, Medium Income, High Importance of SWF Goals for Students (SWF Goals), the class tends to have cognitive outcome scores which are generally below the mean for its grade and grade by income set. However, there does not appear to be any reason to believe it was biased in sample or in data collection. The second such situation is the Grade 4, Low Income, High SWF Goals combination. That class tended to score relatively low on ITBS tests and somewhat higher but still below the mean of the grade on the TTCT measures and Unlikely Things. There is no evidence of bias in sampling or in data collection. The final single-class cell is Grade 5, Medium Income, High SWF Goals. This class tended to score on the low side of the mean for its grade on the ITBS and more nearly around the middle of the grade scores on the TTCT and Unlikely Things. Again, there is no evidence of bias in sampling or in data collection.

Thus, despite the absence of evidence of bias, because these classes stand alone in some of the analyses, it is well to remember that fact in interpreting the results.

Mean scores for the individual level analyses are in Table VA-G-C2. The MANOVA results for both individual and class level analyses are in Table VA-G-C3. These two sets of analyses produce quite different results in that all except the three-way interaction of Grade, Income (High by Medium plus Low Income contrast) and SWF Goals, are significant at the individual level. Only the main effects of Grade and of Income (High by Medium plus Low contrast) are significant at the class level of analyses. However, the means present a very similar pattern. The class level of analysis apparently provides a much more stringent test of significance.

The remainder of the discussion will be based on the individual level of analysis.

A significant Grade by Income by SWF Goals interaction is shown for the Medium by Low Income contrast. The univariate results are provided in Table VA-G-C4 and indicate significant effects on the TTCT measures. Reviewing the means suggests that the results are opposite for the two grades or programs, depending upon which is focussed on first. These results, particularly, involve the cells with single classes. However, the Medium Income classes which are alone in High Goals cells in both grades have the high score (compared with the classes in Low Goals) on at least one of the ITBS variables, suggesting that the classes are not so different in a given direction.

Nonetheless, this interaction is puzzling and provides no assistance to program implementers who wish to make choices. Examination of the means also tend to show that this interaction is true for the TTCT variables only, and there not perfectly. Some of the results to be reported below may provide more help.

Table VA-G-C3 shows that the Program by Income interactions are significant for both Income contrasts. The High by Medium plus Low Income contrast will be considered first. Univariate data for the analysis are provided in Table VA-G-C5, which indicates significant effects on the ITBS measures and Unlikely Things. These results suggest that students in High Income High SWF Goals schools have higher scores than students in Low SWF Goals schools, while the reverse is true for Medium and Low Income school students. The means data appear to support that, especially for the ITBS.

The second income comparison, Medium by Low, shows (Table VA-G-C5) that a significant difference is found only for Problem Solving. On this measure, Medium Income, High Goals schools students have higher scores, while Low Income Low Goals schools students have higher scores.

The Grade by SWF Goals interaction was also significant, as shown in Table VA-G-C3. The univariate results are in Table VA-G-C6. The interaction has significant effects on all cognitive outcomes except Math Problem Solving. The over-all implications of this interaction are that Grade 4 students in Low Goals schools tend to score higher, while Grade 5 students in High Goals schools tend to score higher.

The main effects for SWF Goals, shown to be significant in Table VA-G-C3, are shown on outcomes in Table VA-G-C7. Only one is significantly affected, Math Problem Solving. On that one, students in High Goals schools tend to score higher. The means for all students in High SWF Goals schools compared with those for all students in Low SWF Goals schools indicates that the former appear to be higher on all outcomes except Originality.

The main effects for Income were significant for both Income contrasts. The univariate results are shown in Table VA-G-C8. For the High by Medium plus Low Income contrast, the effect was significant for all outcomes except Originality. Students in High Income schools had higher outcomes. For the Medium by Low Income contrast, the effect was significant for References, Math Problem Solving, Fluency, and Flexibility, and was very nearly significant for Originality. Even Reading and Unlikely Things were near significance. Students in Medium Income schools had higher outcomes. These findings essentially repeat those on Question 1 regarding Income effects.

The main effect of Grade was also significant. The univariate data are in Table VA-G-C9. The effect was significant for all outcomes except Unlikely Things, and was nearly significant for it. Students in Grade 5 had higher outcomes.

A summary of the results for this independent variable (Importance of SWF Goals for Students) is difficult to state. It would appear that the Importance placed on having SWF Goals for Students does not make a consistent difference over-all on cognitive outcomes. However, the main effects of Goals are significant. In comparing the means for the High and Low Goals groups (across Grade and Income), students in High Goals schools appeared to be higher on six of seven scores. If one examines mean scores within a grade (and across income levels), and compares scores of students in High Goals schools with scores of students in Low Goals schools, students in High Goals schools appear to have higher outcomes on 12 of 14 possible comparisons (seven variables for two grade levels).

The data favor the High Goals condition.

Table VA-G-C1

Distribution of Students and Classes for Cognitive Outcomes by Grade, Income, and Importance of SWF Goals for Students
Year 1

Individual Level Analyses

Income	Grade 4 Goals for Students High	Grade 4 Goals for Students Low	Grade 5 Goals for Students High	Grade 5 Goals for Students Low
High	143	30	77	33
Medium	26	122	19	145
Low	23	41	46	70

Class Level Analyses

Income	Grade 4 Goals for Students High	Grade 4 Goals for Students Low	Grade 5 Goals for Students High	Grade 5 Goals for Students Low
High	7	2	4	2
Medium	1	5	1	6
Low	1	3	2	4

Table VA-G-C2

Student Cognitive Outcome Mean Scores by Grade, Income, and Importance of SWF Goals for Students Year 1

Cognitive Outcomes	Income	Means			
		Grade 4		Grade 5	
		Goals for Students		Goals for Students	
		High	Low	High	Low
Reading (ITBS)	High	4.38	3.99	5.51	4.62
	Medium	3.34	3.75	3.43	3.87
	Low	3.02	3.34	3.51	3.96
	Unweighted Mean	3.58	3.69	4.15	4.15
References (ITBS)	High	4.27	4.04	5.65	4.56
	Medium	3.52	3.70	3.96	4.45
	Low	2.55	3.64	3.70	4.10
	Unweighted Mean	3.45	3.79	4.44	4.37
Math Problem Solving (ITBS)	High	4.36	4.34	5.54	4.90
	Medium	3.88	3.68	3.59	4.44
	Low	2.41	3.67	3.43	4.16
	Unweighted Mean	3.55	3.90	4.19	4.50
Fluency (TTCT)	High	21.20	21.77	28.56	25.27
	Medium	20.04	23.57	27.32	22.10
	Low	15.09	12.61	20.63	22.11
	Unweighted Mean	18.77	19.31	15.50	23.16
Flexibility (TTCT)	High	11.07	11.87	13.42	11.61
	Medium	9.54	10.98	12.16	10.77
	Low	8.48	6.98	9.80	10.01
	Unweighted Mean	9.69	9.94	11.79	10.79
Originality (TTCT)	High	21.63	26.10	29.69	28.15
	Medium	20.08	27.36	30.21	26.16
	Low	19.00	15.63	28.30	25.86
	Unweighted Mean	20.23	23.03	38.83	26.72
Unlikely Things	High	31.21	30.73	33.96	30.18
	Medium	26.15	28.83	28.53	28.21
	Low	25.48	27.66	29.72	26.60
	Unweighted Mean	27.61	29.07	30.74	28.33

Table VA-G-C3

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and Importance of SWF Goals for Students

Year 1

Individual Level Analyses

Source	F^a	p
Grade	13.86	.001
Income (High X Medium + Low)	22.93	.001
(Medium X Low)	6.32	.001
Program	2.65	.011
Grade X Program	3.37	.002
Income X Program		
(High X Medium + Low)	5.31	.001
(Medium X Low)	4.27	.001
Grade X Income X Program		
(High X Medium + Low)	1.13	.344
(Medium X Low)	6.13	.001

[a] Degrees of freedom = 7,757

Class Level Analyses

Source	F^a	p
Grade	2.78	.035
Income (High X Medium + Low)	5.42	.002
(Medium X Low)	1.16	.369
Program	1.23	.331
Grade X Program	1.23	.334
Income X Program		
(High X Medium + Low)	1.32	.291
(Medium X Low)	1.06	.422
Grade X Income X Program		
(High X Medium + Low)	.34	.926
(Medium X Low)	1.38	.266

[a] Degrees of freedom = 7,20

Table VA-G-C4

ANOVA for Student Cognitive Outcomes for Three-Way Interaction of Grade, Income, and Importance of SWF Goals for Students
Year 1

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
Reading			2.02	.156
References			2.05	.153
Math Problem Solving			3.29	.070
Fluency	NOT SIGNIFICANT		10.55	.001
Flexibility			6.65	.010
Originality			4.86	.028
Unlikely Things			.49	.487

[a] Degrees of freedom = 1,763

Table VA-G-C5

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income, and Importance of SWF Goals for Students
Year 1

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	18.95	.001	.22	.640
References	25.71	.001	2.64	.105
Math Problem Solving	14.56	.001	6.35	.012
Fluency	.23	.634	.32	.574
Flexibility	.20	.656	.03	.861
Originality	.21	.647	.68	.410
Unlikely Things	4.55	.033	1.88	.170

[a] Degrees of freedom = 1,763

Table VA-G-C6

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Grade, and Importance of SWF Goals for Students
Year 1

Cognitive Outcomes	F[a]	p
Reading	5.03	.025
References	4.99	.026
Math Problem Solving	.48	.489
Fluency	5.94	.015
Flexibility	4.37	.037
Originality	6.18	.013
Unlikely Things	16.75	.001

[a] Degrees of freedom = 1,763

Table VA-G-C7

ANOVA for Student Cognitive Outcomes for Main Effects of Importance of SWF Goals for Students
Year 1

Cognitive Outcomes	F[a]	p
Reading	.13	.723
References	.51	.477
Math Problem Solving	5.72	.017
Fluency	.24	.624
Flexibility	.33	.566
Originality	.02	.876
Unlikely Things	2.05	.152

[a] Degrees of freedom = 1,763

Table VA-G-C8

ANOVA for Student Cognitive Outcomes for Main Effects of Income
Year 1

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	98.99	.001	3.11	.078
References	77.96	.001	13.21	.001
Math Problem Solving	104.46	.001	11.75	.001
Fluency	7.62	.006	13.41	.001
Flexibility	17.90	.001	15.55	.001
Originality	.49	.483	3.80	.052
Unlikely Things	46.04	.001	3.48	.063

[a] Degrees of freedom = 1,763

Table VA-G-C9

ANOVA for Student Cognitive Outcomes for Main Effects of Grade
Year 1

Cognitive Outcomes	F[a]	p
Reading	31.01	.001
References	85.57	.001
Math Problem Solving	61.91	.001
Fluency	16.14	.001
Flexibility	10.60	.001
Originality	12.02	.001
Unlikely Things	3.49	.062

[a] Degrees of freedom = 1,763

(2) Data on Affective/Social Outcomes

The distribution of students and classes for whom complete affective/social data were available is shown in Table VA-G-A1. Data were not available for those students in the Grade 4, Low Income, High Goals cell. Comparisons depending upon that cell will not be made.

As discussed above in the section on cognitive data, there are some other single class cells. The Grade 4, Medium Income, High Goals cell is comprised of a class which tends to be in the low or low middle part of the distribution of classes in its grade on the affective/social outcomes. The Grade 5, Medium Income, High Goals cell is comprised of a class which tends to be around the middle of its grade or toward the high end of the distribution of classes. Nothing in the sampling or data collection suggests that a bias would be present.

Means scores, based on individual level analyses, are provided in Table VA-G-A2.

Results of the MANOVA for both individual and class level analyses are in Table VA-G-A3. The major difference between the two levels is that Income does not have a significant main effect at the class level.

The remainder of the discussion will be based on individual level analyses.

A three-way interaction is shown to be near significance, but it does not achieve it. The Income by SWF Goals interaction is significant for the High by Medium Income contrast. Table VA-G-A4 shows that the univariate effects are significant for the SOCL, POQ, and Getting Help, with the IAR approaching significance. Examination of the means indicates that the interaction results from students in High Income High SWF Goals, schools scoring higher than their counterparts in Low SWF goals schools; while students in Medium Income, Low SWF Goals, schools score higher than those in High SWF Goals schools.

A significant main effect for SWF Goals for Students was reported in Table VA-G-A3. The univariate data are in Table VA-G-A5. The effect is significant for the SOCL and the POQ. Students in schools high on SWF Goals for Students have higher outcome scores. This may be a consequence of the tendency of students in Grade 5 to score higher in high Goals schools and the empty cell in Grade 4 Low Income high Goals. However, the finding was also significant in the class level analysis. In addition, the Multivariance computer program, used in this study, was designed to adjust for the empty cell in this main effects computation. This main effects finding does give some support to the expectation that emphasis on SWF Goals for Students may have beneficial outcomes for students.

The Income main effects are shown in Table VA-G-A6. Students in High Income school classes score higher on the POQ and the IAR.

To summarize these results, students appear to be better off if: (1) in High Income schools, there is high importance placed on SWF Goals for Students; and (2) if in Medium Income schools, there is low importance on those goals.

(3) Summary

The impact of SWF Goals for Students on affective/social outcomes is mixed by Grade and Income. The main effects of Goals are significant and favor High Goals schools on two of the outcomes; there is no difference on the other three. Thus, students generally do somewhat better in schools high on SWF Goals for Students.

Table VA-G-A1

Distribution of Students and Classes for Affective/Social Outcomes by Grade, Income, and Importance of SWF Goals for Students

Year 1

Individual Level Analyses

Income	Grade 4 Goals for Students High	Grade 4 Goals for Students Low	Grade 5 Goals for Students High	Grade 5 Goals for Students Low
High	138	30	76	33
Medium	22	113	18	139
Low	0	39	44	52

Class Level Analyses

Income	Grade 4 Goals for Students High	Grade 4 Goals for Students Low	Grade 5 Goals for Students High	Grade 5 Goals for Students Low
High	7	2	4	2
Medium	1	5	1	6
Low	0	3	2	3

Table VA-G-A2

Student Affective/Social Outcome Mean Scores by Grade, Income, and Importance of SWF Goals for Students
Year 1

Affective/ Social	Income	Means			
		Grade 4		Grade 5	
		Goals for Students		Goals for Students	
		High	Low	High	Low
SOCL	High	61.88	60.97	62.11	58.27
	Medium	60.36	60.45	60.61	61.17
	Low	-	58.21	60.98	58.96
	Unweighted Means	61.07	59.88	61.23	39.08
PCQ	High	29.54	31.20	29.17	21.91
	Medium	24.23	25.60	25.67	25.66
	Low	-	25.69	29.59	28.10
	Unweighted Means	26.89	27.50	28.14	25.22
IAR	High	18.99	18.27	18.66	18.36
	Medium	15.73	18.19	19.22	17.96
	Low	-	18.18	17.09	18.40
	Unweighted Means	17.36	18.21	18.32	18.24
Giving Help	High	1.97	1.93	1.98	1.84
	Medium	1.89	2.06	1.90	1.95
	Low	-	1.97	2.04	2.07
	Unweighted Means	1.93	1.99	1.97	1.95
Getting Help	High	2.06	2.04	2.01	1.86
	Medium	1.92	2.10	1.84	2.01
	Low	-	2.04	2.14	2.03
	Unweighted Means	1.99	2.06	1.99	1.97

Table VA-G-A3

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and Importance of SWF Goals for Students

Year 1

Individual Level Analyses

Source	F[a]	p
Grade	1.26	.280
Income (High X Medium + ~~Low~~) ~~(Medium X Low)~~-	3.43	.005
Program	3.50	.004
Grade X Program	.27	.929
Income X Program (High X Medium + ~~Low~~)- -~~(Medium X Low)~~--	2.83	.016
Grade X Income X Program (High X Medium + ~~Low~~)- -~~(Medium-X-Low)~~--	2.11	.062

[a] Degrees of freedom = 5,689

Class Level Analyses

Source	F[a]	p
Grade	.21	.956
Income (High X Medium + ~~Low~~)- ~~(Medium-X-Low)~~-	.93	.481
Program	2.81	.043
Grade X Program	1.91	.137
Income X Program (High X Medium + ~~Low~~)- ~~(Medium-X-Low)~~-	2.63	.054
Grade X Income X Program (High X Medium + ~~Low~~)- -~~(Medium-X-Low)~~-	2.24	.088

[a] Degrees of freedom = 5,21

Table VA-G-A4

ANOVA for Student Affective/Social Outcomes for Two-Way Interaction of Income and Importance of SWF Goals for Students

Year 1

Affective/Social Outcomes	High X Medium ~~+ Low~~-Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	4.59	.033		
POQ	6.57	.011		
IAR	3.16	.076	EMPTY CELL	
Giving Help	2.55	.111		
Getting Help	6.74	.010		

[a] Degrees of freedom = 1,693

Table VA-G-A5

ANOVA for Student Affective/Social Outcomes for Main Effects of Importance of SWF Goals for Students

Year 1

Affective/Social Outcomes	F[a]	p
SOCL	7.86	.006
POQ	7.75	.006
IAR	1.01	.314
Giving Help	.04	.834
Getting Help	.22	.639

[a] Degrees of freedom = 1,693

Table VA-G-A6

ANOVA for Student Affective/Social Outcomes for Main Effects of Income
Year 1

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
SOCL	.36	.548		
POQ	8.86	.003	EMPTY CELL	
IAR	8.28	.004		
Giving Help	.46	.497		
Getting Help	.23	.632		

[a] Degrees of freedom = 1,693

b. Impact of SWF Teacher Role Behavior

As part of the data collection on organizational variables, school staff members were asked to describe the extent to which teachers were doing various activities which had been evaluated by Educator Training Center staff members for their importance to the SWF program. (For a further discussion of this measure, see Section V.A.3. above.) As before, scores were developed for each respondent, and an average for each school computed. An analysis of variance across schools indicated significant differences among the schools. The school averages were arrayed from high to low, and the schools were split into High and Low categories.

(1) Data on Cognitive Outcomes

The distribution of students and classes is provided in Table VA-T-C1. None of the Low Income Grade 4 classes were in the High SWF Teacher Role Behavior category. Put differently, the staffs in Low Income schools were less likely to say that teachers were doing the things important to the SWF program. None of the interactions involving the Low Income category separately will be discussed.

One cell in the three-factor design had a single class. That cell is in Grade 5 Low Income high SWF Teacher Role Behavior. The class was above the mean for its grade and income set on Reading, in the middle on Math Problem Solving, Fluency, Flexibility, and Originality, and low on References and Unlikely Things. There is no evidence of bias in the selection of, or in the collection of data from, this class.

The means for the cognitive outcome variables, based on individual level analyses, are presented in Table VA-T-C2.

Results of the MANOVA for both individual and class level analyses are in Table VA-T-C3. There are many more significant findings at the individual level than at the class level. For the latter, only Grade and Income main effects were significant. The means were, however, quite similar. This indicates that the class level analyses are more demanding.

The remainder of the discussion will be based on the individual level analyses.

In Table VA-T-C3, a significant Income (High by Medium contrast) by SWF Teacher Role Behavior interaction was found. The univariate data are in Table VA-T-C4. Effects are significant for Originality and nearly so for Fluency. On Originality, the means indicate that students in High Income schools do better in Low SWF Teacher Role Behavior schools, while Medium Income school students do better in High.

The Grade by SWF Teacher Role Behavior interaction is also shown to be significant in Table VA-T-C3. Univariate data are in Table VA-T-C5 and show the effects to be almost significant for Math

Problem Solving and Originality. Inspection of the means suggests that differences between High and Low SWF Teacher Role Behavior cells (within a Grade and Income set) are greater at Grade 4 than at Grade 5. This would indicate a greater impact of SWF Teacher Role Behavior in Grade 4.

The main effects of SWF Teacher Role Behavior are shown to be significant in Table VA-T-C3. The univariate data are in Table VA-T-C6. Examination of the means indicates that, at both grade levels, students in High SWF Teacher Role Behavior schools generally score higher on outcomes than students in Low SWF Teacher Role Behavior schools. That apparent difference appears for 11 of 14 possible comparisons in Grade 4 and for 17 of 21 in Grade 5.

The univariate data for the significant main effects of Income and Grade are in Tables VA-T-C7 and C8 respectively.

Cognitive outcome data can be summarized by noting that students are generally better off in schools in which teachers are reported to be engaging in SWF Teacher Role Behaviors to a greater extent.

Table VA-T-C1

Distribution of Students and Classes for Cognitive Outcomes by Grade, Income, and Teacher SWF Role Behavior
Year 1

Individual Level Analyses

Income	Grade 4		Grade 5	
	Teacher Role Behavior		Teacher Role Behavior	
	High	Low	High	Low
High	103	70	53	57
Medium	106	42	107	57
Low	0	64	18	98

Class Level Analyses

Income	Grade 4		Grade 5	
	Teacher Role Behavior		Teacher Role Behavior	
	High	Low	High	Low
High	5	4	3	3
Medium	4	2	4	3
Low	0	4	1	5

Table VA-T-C2

Student Cognitive Outcome Mean Scores by Grade, Income, and Teacher SWF Role Behavior Year 1

Cognitive Outcomes	Income	Means			
		Grade 4		Grade 5	
		Teacher Role Behavior		Teacher Role Behavior	
		High	Low	High	Low
Reading (ITBS)	High	4.45	4.11	5.48	5.02
	Medium	3.71	3.58	3.78	3.90
	Low	0	3.23	4.01	3.74
	Unweighted Mean	4.08	3.64	4.42	4.22
References (ITBS)	High	4.30	4.13	5.78	4.89
	Medium	3.72	3.55	4.54	4.11
	Low	0	3.25	3.88	3.95
	Unweighted Mean	4.01	3.64	4.73	4.32
Math Problem Solving (ITBS)	High	4.30	4.44	5.57	5.14
	Medium	3.72	3.70	4.47	4.08
	Low	0	3.22	4.03	3.84
	Unweighted Mean	4.01	3.77	4.69	4.35
Fluency (TTCT)	High	21.84	20.50	28.45	26.75
	Medium	24.79	18.29	23.84	20.58
	Low	0	13.50	24.50	20.98
	Unweighted Mean	23.31	17.43	25.59	22.77
Flexibility (TTCT)	High	11.53	10.73	13.19	12.58
	Medium	11.20	9.52	11.40	10.04
	Low	0	7.52	10.11	9.90
	Unweighted Mean	11.37	9.26	11.56	10.84
Originality (TTCT)	High	22.18	22.73	27.17	31.14
	Medium	28.58	19.76	27.46	25.07
	Low	0	16.84	29.50	26.34
	Unweighted Mean	25.30	19.77	28.04	27.52
Unlikely Things	High	31.42	30.70	33.79	31.93
	Medium	29.02	26.69	28.32	28.11
	Low	0	26.88	23.44	28.64
	Unweighted Mean	30.22	28.09	28.51	29.56

Table VA-T-C3

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and Teacher SWF Role Behavior

Year 1

Individual Level Analyses

Source	F^a	p
Grade	14.62	.001
Income (High X Medium + ~~Low)~~ ~~(Medium X Low)~~	20.33	.001
Program	5.21	.001
Grade X Program	3.83	.001
Income X Program (High X Medium + ~~Low)~~ ~~(Medium X Low)~~	2.85	.006
Grade X Income X Program (High X Medium + ~~Low)~~ ~~(Medium X Low)~~	1.45	.184

[a] Degrees of freedom = 7,758

Class Level Analyses

Source	F^a	p
Grade	2.83	.031
Income (High X Medium + ~~Low)~~ ~~(Medium X Low)~~	5.57	.001
Program	1.99	.106
Grade X Program	1.20	.344
Income X Program (High X Medium + ~~Low)~~ ~~(Medium X Low)~~	1.25	.323
Grade X Income X Program (High X Medium + ~~Low)~~ ~~(Medium X Low)~~	.20	.982

[a] Degrees of freedom = 7,21

Table VA-T-C4

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income and Teacher SWF Role Behavior
Year 1

Cognitive Outcomes	High X Medium ~~+ Low~~ Income		Medium X Low Income	
	F^a	p	F^a	p
Reading	1.82	.179		
References	.56	.456		
Math Problem Solving	.29	.593		
Fluency	3.51	.062	EMPTY CELL	
Flexibility	1.36	.243		
Originality	6.90	.009		
Unlikely Things	.08	.776		

[a] Degrees of freedom = 1,764

Table VA-T-C5

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Grade and Teacher SWF Role Behavior
Year 1

Cognitive Outcomes	F^a	p
Reading	.77	.379
References	3.08	.080
Math Problem Solving	3.65	.056
Fluency	2.29	.131
Flexibility	1.31	.253
Originality	3.66	.056
Unlikely Things	3.10	.079

[a] Degrees of freedom = 1,764

Table VA-T-C6

ANOVA for Student Cognitive Outcomes for Main Effects of Teacher SWF Role Behavior
Year 1

Cognitive Outcomes	F[a]	p
Reading	3.45	.064
References	10.00	.002
Math Problem Solving	1.86	.173
Fluency	9.12	.003
Flexibility	6.56	.011
Originality	1.71	.191
Unlikely Things	1.10	.294

[a] Degrees of freedom = 1,764

Table VA-T-C7

ANOVA for Student Cognitive Outcomes for Main Effects of Income
Year 1

Cognitive Outcomes	High X Medium + ~~Low~~ Income		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	91.40	.001		
References	53.54	.001		
Math Problem Solving	56.21	.001	EMPTY CELL	
Fluency	2.89	.090		
Flexibility	9.62	.002		
Originality	.05	.819		
Unlikely Things	53.03	.001		

[a] Degrees of freedom = 1,764

Table VA-T-C8

ANOVA for Student Cognitive Outcomes for Main Effects of Grade Year 1

Cognitive Outcomes	F[a]	p
Reading	31.67	.001
References	87.38	.001
Math Problem Solving	63.50	.001
Fluency	16.94	.001
Flexibility	10.99	.001
Originality	12.55	.001
Unlikely Things	3.24	.073

[a] Degrees of freedom = 1,764

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(2) Data on Affective/Social Outcomes

The distribution of students and classes is shown in Table VA-T-A1. Again, the empty cell in Grade 4 eliminates comparisons of Low Income school classes separately. There is a cell with a single class in Grade 5 Low Income High SWF Teacher Role Behavior. That class was high in its grade and income set on the POQ, IAR, and Getting Help. It was in the middle on Giving Help. It was low on the SOCL. There is no evidence of bias in the selection of this class, nor in data collection in it.

Means for the affective/social outcomes, based on individual level analyses, are presented in Table VA-T-A2.

The MANOVA results for both individual and class level analyses are in Table VA-T-A3. The main differences between the two sets of analyses is that significant interactions were found for Grade by SWF Teacher Role Behavior and Income by SWF Teacher Role Behavior at the individual level of analysis. The mean scores in the two analyses are quite similar. As before, the class level of analysis is a more stringent test.

The remainder of the discussion will be based on the individual level analyses.

There is a significant three-way interaction among Grade, Income (High by Medium contrast), and SWF Teacher Role Behavior. Univariate data in Table VA-T-A4 show that the effects of the interaction are significant for the POQ and nearly for the SOCL. Examination of the means in Table VA-T-A2 indicate that the effects vary for outcome, Grade, and Income in terms of which condition, High or Low SWF Teacher Role Behavior, appears to have the more favorable effects. It appears that, for High Income school students, those in Grade 4 do better in Low SWF Teacher Role Behavior schools; while those in Grade 5 do better in High SWF Teacher Role Behavior schools. For Medium Income school students, both those in Grade 4 and those in Grade 5 do better in Low SWF Teacher Role Behavior schools on the POQ, but that is not true for the SOCL. Thus, these results--and the fact that they are not replicated on other affective/social outcomes--do not provide teachers or others with a basis for deciding to implement or not to implement the program.

The interaction of Income (High by Medium contrast) with SWF Teacher Role Behavior is also significant in Table VA-T-A3. Univariate results in Table VA-T-A5 display a significant effect on the POQ. Examination of the means shows that students in High Income High SWF Teacher Role Behavior schools probably score higher on the POQ than High Income school students in Low SWF Teacher Role Behavior schools. The opposite is probably true for students in Medium Income schools. However, this is mainly a consequence of the large difference between High and Low SWF Teacher Role Behavior means for High Income school students in Grade 5.

The interaction of Grade and SWF Teacher Role Behavior is significant in Table VA-T-A3. The univariate data in Table VA-T-A6 show the effects significant for the POQ and the IAR. Examination of the means suggests that students in Grade 4 may have higher outcomes in Low SWF Teacher Role Behavior schools, while Grade 5 students may have higher outcomes in High SWF Teacher Role Behavior schools.

The univariate data for the significant main effect of Income (High by Medium contrast) are in Table VA-T-A7. Again, they indicate that students in High Income school classes have higher POQ and IAR scores.

To summarize, the impact of SWF Teacher Role Behavior is mixed. Although some significant interactions were found, there is no pattern across outcomes. It would be difficult to say that such teacher behavior affected affective/social outcomes in a clear-cut way.

(3) Summary for SWF Teacher Role Behavior

The results of the analysis of cognitive data are relatively clear in indicating that students generally have higher outcomes in schools High on SWF Teacher Role Behavior. The results of the analysis of affective/social data do not provide evidence that being High or Low on SWF Teacher Role Behavior is likely to be generally helpful.

Over-all, students are probably better off in schools which are High on SWF Teacher Role Behavior.

Table VA-T-A1

Distribution of Students and Classes for Affective/Social Outcomes by Grade, Income, and SWF Teacher Role Behavior

Year 1

Individual Level Analyses

Income	Grade 4		Grade 5	
	Teacher Role Behavior		Teacher Role Behavior	
	High	Low	High	Low
High	99	69	54	55
Medium	95	40	102	55
Low	0	39	19	77

Class Level Analyses

Income	Grade 4		Grade 5	
	Teacher Role Behavior		Teacher Role Behavior	
	High	Low	High	Low
High	5	4	3	3
Medium	4	2	4	3
Low	0	3	1	4

Table VA-T-A2

Student Affective/Social Outcome Mean Scores by Grade, Income, and SWF Teacher Role Behavior
Year 1

Affective/ Social	Income	Means Grade 4 Teacher Role Behavior High	Means Grade 4 Teacher Role Behavior Low	Means Grade 5 Teacher Role Behavior High	Means Grade 5 Teacher Role Behavior Low
SOCL	High	61.56	61.94	62.24	59.67
	Medium	60.69	59.83	60.92	61.45
	Low	0	58.21	58.37	60.26
	Unweighted Means	61.13	60.00	60.51	60.46
POQ	High	29.52	30.30	30.44	23.56
	Medium	24.85	26.63	25.20	26.53
	Low	0	25.69	30.47	28.36
	Unweighted Means	27.19	27.54	28.70	26.15
IAR	High	18.85	18.87	19.26	17.89
	Medium	17.72	17.98	18.45	17.45
	Low	0	18.18	20.26	17.19
	Unweighted Means	18.29	18.34	19.32	17.51
Giving Help	High	2.00	1.91	1.94	1.94
	Medium	2.04	2.00	1.95	1.95
	Low	0	1.97	2.04	2.06
	Unweighted Means	2.02	1.96	1.98	1.98
Getting Help	High	2.09	2.01	1.97	1.96
	Medium	2.07	2.09	2.00	1.98
	Low	0	2.04	2.16	2.06
	Unweighted Means	2.08	2.05	2.04	2.00

Table VA-T-A3

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and SWF Teacher Role Behavior

Year 1

Individual Level Analyses

Source	F[a]	p
Grade	1.22	.297
Income (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	7.95	.001
Program	1.73	.126
Grade X Program	3.43	.005
Income X Program (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	2.59	.025
Grade X Income X Program (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	2.38	.038

[a] Degrees of freedom = 5,689

Class Level Analyses

Source	F[a]	p
Grade	.23	.944
Income (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	4.42	.007
Program	1.50	.232
Grade X Program	1.64	.194
Income X Program (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	1.83	.150
Grade X Income X Program (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	3.19	.027

[a] Degrees of freedom = 5,21

Table VA-T-A4

ANOVA for Student Affective/Social Outcomes for Three-Way Interaction of Grade, Income, and SWF Teacher Role Behavior

Year 1

Affective/Social Outcomes	High X Medium ~~+ Low~~ Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	3.34	.068	EMPTY CELL	
POQ	8.59	.004		
IAR	.01	.944		
Giving Help	.02	.901		
Getting Help	.11	.738		

[a] Degrees of freedom = 1,693

Table VA-T-A5

ANOVA for Student Affective/Social Outcomes for Two-Way Interaction of Income and SWF Teacher Role Behavior

Year 1

Affective/Social Outcomes	High X Medium ~~+ Low~~ Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	.66	.418	EMPTY CELL	
POQ	12.16	.001		
IAR	.06	.815		
Giving Help	.11	.738		
Getting Help	.51	.476		

[a] Degrees of freedom = 1,693

Table VA-T-A6

ANOVA for Student Affective/Social Outcomes for Two-Way Interaction of Grade and SWF Teacher Role Behavior

Year 1

Affective/Social Outcomes	F[a]	p
SOCL	.038	.846
POQ	4.065	.044
IAR	10.323	.002
Giving Help	2.635	.202
Getting Help	.259	.612

[a] Degrees of freedom = 1,693

Table VA-T-A7

ANOVA for Student Affective/Social Outcomes for Main Effects of Income

Year 1

Affective/Social Outcomes	High X Medium +-~~Low~~-Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	1.74	.187	EMPTY CELL	
POQ	35.53	.001		
IAR	9.77	.002		
Giving Help	.36	.550		
Getting Help	.02	.901		

[a] Degrees of freedom = 1,693

c. Impact of Rewards for SWF Teacher Role Behavior

In the questionnaire completed by staff members of the schools participating in the research were a series of questions asking about the frequency with which teachers were praised or otherwise rewarded for engaging in activities important to the SWF program. (For further discussion of this measure, see section V.A.3. above.) As with the previously discussed organizational measures, a mean score of the responses of staff members in a given school was computed. These means were subjected to an ANOVA, and significant differences were found. Schools were arrayed according to their score, and divided into High and Low groups. The students were then classified according to the position of their school on this measure, on Income, and on Grade. The multivariate analysis of variance was then conducted for cognitive outcomes (and, to be discussed, for affective/social outcomes).

(1) Data on Cognitive Outcomes

Table VA-R-C1 displays the distribution of students and classes. The disparities among the cells are sizeable. They suggest that the staffs in the High and Medium Income schools are more likely to state that teachers are praised or otherwise rewarded (for engaging in activities important to the SWF program) than are the staffs in Low Income schools. This finding is worth noting even though it was not one of the questions pursued by this study. While it can only be conjectured on, it raises the questions of whether the training program for school staffs had smaller impact in Low Income schools, or whether student needs seem to dictate other actions on the part of school staffs, or whether other factors affected the responses of staff members to the questionnaires.

There is only one class in the Grade 4, Medium Income, Low Rewards for SWF Teacher Role Behavior cell of the factorial design. In comparison with all other classes in Grade 4, that class is generally somewhat below the mean in student outcome scores. There is no indication that class selection or data collection were biased. However, since it is the only class in the cell, interpretation of the findings should recognize that fact. It is encouraging to note that mean outcomes for Medium Income students in Grade 5 tend to parallel those in Grade 4, as shown in Table VA-R-C2.

However, at High Income levels, that consistency between grades does not appear, and there is a single class in Grade 5 Low SWF Teacher Role Behavior. In comparison with all other classes in Grade 5, that class is generally above the mean, but it is never the highest nor lowest. There is no information suggesting that the data are biased in any systematic way. Again, however, the results need to be understood in light of this information.

The third cell with a single class is in Grade 5 Low Income High SWF Rewards. The class was low in its grade and income set on References and Unlikely Things; in the middle on Math Problem Solving, Fluency, Flexibility, and Originality; and high on Reading. There is no evidence of bias in selection of the class nor in data collection.

There is a significant three-way interaction of Grade, Income (High by Medium contrast), and Rewards for Teachers. The univariate data are in Table VA-R-C4. Despite the significant MANOVA, the effects are not significant for any individual outcomes.

A significant Income (High by Medium contrast) by Rewards for Teachers interaction was shown in Table VA-R-C3. A review of the means indicates that Medium Income school students in High Rewards schools almost always have higher outcome scores, while students in High Income schools show more mixed results. The results in Table VA-R-C5 show that Reading and Unlikely Things reach significance. Originality nearly does. High Income school students appear to do better in Low Rewards schools, while the opposite is true for Medium Income school students. This result may be a consequence of the single class in the Grade 5 High Income, Low Rewards, cell, since the means data for Grade 4 look different for High Income school students.

The Grade by Rewards interaction is also significant. (Univariate results are in Table VA-R-C6.) An examination of the means and differences among them suggests that the three-way interaction discussed above provides the best explanation.

The Grade and Income main effects were as reported previously: students in Grade 5 scored higher than students in Grade 4, and students in High Income schools scored higher than students in Medium Income schools. See Tables VA-R-C7 and -C8.

To summarize the cognitive data, students in High Rewards for Teachers schools, in general, have higher student outcome scores. The cognitive outcomes seem to indicate that students in Medium Income schools in which teachers are frequently rewarded for SWF Behavior nearly always score higher than students in schools in which teachers are not so rewarded. In High Income schools, there seems to be mixed results, with students in Grade 4 doing better in High Reward schools and students in Grade 5 doing better in Low Reward schools. While not involved in the interaction analyses, Low Income students in Grade 5 appear to be better off in High Reward schools.

Table VA-R-C1

Distribution of Students and Classes for Cognitive Outcomes by Grade, Income, and Rewards for Teacher SWF Role Behavior
Year 1

Individual Level Analyses

Income	Grade 4		Grade 5	
	Rewards		Rewards	
	High	Low	High	Low
High	133	40	86	24
Medium	122	26	128	36
Low	0	64	18	98

Class Level Analyses

Income	Grade 4		Grade 5	
	Rewards		Rewards	
	High	Low	High	Low
High	7	2	5	1
Medium	5	1	5	2
Low	0	4	1	5

Table VA-R-C2

Student Cognitive Outcome Mean Scores by Grade, Income, and Rewards for Teacher SWF Role Behavior
Year 1

Cognitive Outcomes	Income	Means			
		Grade 4		Grade 5	
		Rewards		Rewards	
		High	Low	High	Low
Reading (ITBS)	High	4.35	4.20	5.15	5.57
	Medium	3.74	3.34	3.93	3.44
	Low	0	3.23	4.01	3.74
	Unweighted Mean	4.05	3.59	4.36	4.25
References (ITBS)	High	4.24	4.20	5.31	5.36
	Medium	3.70	3.52	4.48	4.08
	Low	0	3.25	3.88	3.95
	Unweighted Mean	3.97	3.66	4.56	4.46
Math Problem Solving (ITBS)	High	4.31	4.51	5.31	5.48
	Medium	3.68	3.88	4.45	3.92
	Low	0	3.22	4.03	3.84
	Unweighted Mean	4.00	3.87	4.60	4.20
Fluency (TTCT)	High	21.83	19.55	27.23	28.79
	Medium	23.57	20.04	22.87	22.14
	Low	0	13.50	24.50	20.98
	Unweighted Mean	22.70	17.70	24.86	23.97
Flexibility (TTCT)	High	11.61	9.88	12.58	13.92
	Medium	10.98	9.54	11.16	10.11
	Low	0	7.52	10.11	9.90
	Unweighted Mean	11.30	8.98	11.28	11.31
Originality (TTCT)	High	23.07	20.20	27.55	35.25
	Medium	27.36	20.08	27.00	25.31
	Low	0	16.84	29.50	26.34
	Unweighted Mean	25.22	19.04	28.02	28.96
Unlikely Things	High	31.26	30.68	32.41	34.33
	Medium	28.83	26.15	28.59	27.00
	Low	0	26.88	23.44	28.64
	Unweighted Mean	30.05	27.90	28.15	29.99

Table VA-R-C3

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and Rewards for Teacher SWF Role Behavior
Year 1

Individual Level Analyses

Source	F[a]	p
Grade	13.60	.001
Income (High X Medium ~~+ Low)~~ --~~(Medium X Low)~~--	19.17	.001
Program	1.16	.323
Grade X Program	3.01	.004
Income X Program (High X Medium + ~~Low)~~ --~~(Medium X Low)~~--	2.40	.020
Grade X Income X Program (High X Medium + ~~Low)~~ --~~(Medium X Low)~~--	2.35	.022

[a] Degrees of freedom = 7,758

Class Level Analyses

Source	F[a]	p
Grade	2.74	.035
Income (High X Medium + ~~Low)~~-- ~~(Medium X Low)~~--	5.58	.001
Program	.46	.854
Grade X Program	.64	.718
Income X Program (High X Medium + ~~Low)~~ ~~(Medium X Low)~~--	1.09	.405
Grade X Income X Program (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~--	.51	.816

[a] Degrees of freedom = 7,21

Table VA-R-C4

ANOVA for Student Cognitive Outcomes for Three-Way Interaction of Grade, Income, and Rewards for SWF Teacher Role Behavior
Year 1

Cognitive Outcomes	High X Medium +-~~Low~~-Income		Medium X Low Income	
	F^a	p	F^a	p
Reading	1.07	.301	EMPTY CELL	
References	.25	.616		
Math Problem Solving	.01	.940		
Fluency	2.20	.139		
Flexibility	.01	.908		
Originality	.31	.579		
Unlikely Things	.25	.618		

[a] Degrees of freedom = 1,764

Table VA-R-C5

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income and Rewards for Teacher SWF Role Behavior
Year 1

Cognitive Outcomes	High X Medium +-~~Low~~-Income		Medium X Low Income	
	F^a	p	F^a	p
Reading	4.52	.034	EMPTY CELL	
References	1.16	.283		
Math Problem Solving	1.78	.182		
Fluency	.61	.434		
Flexibility	.94	.333		
Originality	3.14	.077		
Unlikely Things	5.09	.024		

[a] Degrees of freedom = 1,764

Table VA-R-C6

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Grade and Rewards for Teacher SWF Role Behavior
Year 1

Cognitive Outcomes	F^a	p
Reading	.18	.672
References	.50	.482
Math Problem Solving	2.95	.087
Fluency	3.91	.048
Flexibility	4.77	.029
Originality	5.62	.018
Unlikely Things	3.93	.048

[a] Degrees of freedom = 1,764

Table VA-R-C7

ANOVA for Student Cognitive Outcomes for Main Effects of Income
Year 1

Cognitive Outcomes	High X Medium + ~~Low~~-Income		Medium X Low Income	
	F^a	p	F^a	p
Reading	89.36	.001	EMPTY CELL	
References	47.82	.001		
Math Problem Solving	54.54	.001		
Fluency	1.83	.177		
Flexibility	8.07	.005		
Originality	.14	.710		
Unlikely Things	52.01	.001		

[a] Degrees of freedom = 1,764

Table VA-R-C8

ANOVA for Student Cognitive Outcomes for Main Effects of Grade Year 1

Cognitive Outcomes	F[a]	p
Reading	30.45	.001
References	83.02	.001
Math Problem Solving	62.58	.001
Fluency	15.56	.001
Flexibility	10.08	.002
Originality	11.98	.001
Unlikely Things	3.09	.079

[a] Degrees of freedom = 1,764

(2) Data on Affective/Social Outcomes

Table VA-R-A1 gives the distribution of students and classes by Grade, Income, and Rewards for SWF Teacher Role Behavior for the first year for affective/social outcomes. Again, the cell for Grade 4, Low Income, High Rewards for SWF Teacher Role Behavior is empty. Therefore, data concerning only Low Income schools or interactions involving that cell will not be presented. Three cells in the three-factor design have single classes. The first is in Grade 4 in Medium Income in Low Rewards. This class is generally low in outcome scores in its grade and income set. The second single-class cell is in Grade 5 High Income Low Rewards. This class is high on SOCL outcomes in its grade and income set, above the mean on Giving and Getting Help, near the mean on the POQ, and below the mean on the IAR. The third single-class cell is in Grade 5 Low Income High Rewards. This class is low in its grade and income set on the SOCL, in the middle on Giving Help, and high on the POQ, the IAR, and Getting Help. There is no evidence of bias in the selection of these classes nor in data collection in them.

Table VA-R-A2 provides the student affective/social outcome mean scores based on individual level analyses.

The MANOVA results for analyses at both the individual and class levels are in Table VA-R-A3. The main differences are that none of the analyses at the class level are significant. The distributions of means for both levels of analysis are quite similar. The class level is again a more stringent test of the differences.

The remainder of the discussion will be based on individual level analyses.

A three-way interaction is found significant, when High Income is contrasted with Medium (and Low Income data are ignored). Table VA-R-A4, which reports univariate results, indicates that the interaction has a significant effect only on the IAR. Inspection of the means in Table VA-R-A2 indicates that the means on the IAR are exactly opposite for Grades 4 and 5, when Income (High and Medium) and Rewards are considered. There do not appear to be patterns for the other variables.

A significant Grade by Program interaction is also reported in Table VA-R-A3. Table VA-R-A5 provides the univariate results. There is a significant effect for the POQ and for Giving Help. Examination of the means for all variables suggests that Grade 4 students are more regularly benefitted by being in High Rewards schools; in Grade 5, benefits seem almost evenly split between the High and Low Rewards situation. The fact that there are cells in the factorial design (Table VA-R-A1) with only one class requires consideration here. Examination of the comparisons (between High and Low Rewards) at the High Income level in Grade 4, where two or more classes are involved in each cell, however, shows that two of the five (across outcome variables) scores are high in Low Rewards. In addition, consideration of those comparisons at the Medium Income level in Grade 5 (again, each cell has two or more classes) shows two of five scores are in High Rewards, the remainder being essentially equal or in Low Rewards. Thus, the single-class cells do not seem to be distorting the results.

Table VA-R-A3 shows a significant main effect for Income (High X Medium). This was discussed regarding Question 1 in Section III.6.a, and regarding Goals in IV.6.a.

Thus, the affective/social outcome analysis indicates that High and Medium Income school students in Grade 4 tend to be better off in High Rewards for SWF Teacher Role Behaviors, but the results are much more mixed in Grade 5.

Table VA-R-A1

Distribution of Students and Classes for Affective/Social Outcomes by Grade, Income, and Rewards for Teacher SWF Role Behavior

Year 1

Individual Level Analyses

Income	Grade 4		Grade 5	
	Rewards		Rewards	
	High	Low	High	Low
High	129	39	87	22
Medium	113	22	121	36
Low	0	39	19	77

Class Level Analyses

Income	Grade 4		Grade 5	
	Rewards		Rewards	
	High	Low	High	Low
High	7	2	5	1
Medium	5	1	5	2
Low	0	3	1	4

Table VA-R-A2

Student Affective/Social Outcome Mean Scores by Grade, Income, and Rewards for Teacher SWF Role Behavior
Year 1

Affective/ Social	Income	Means Grade 4 Rewards High	Means Grade 4 Rewards Low	Means Grade 5 Rewards High	Means Grade 5 Rewards Low
SOCL	High	61.42	62.69	60.74	61.77
	Medium	60.45	60.36	61.50	59.75
	Low	0	58.21	58.37	60.26
	Unweighted Means	60.94	60.42	60.20	60.41
POQ	High	29.91	29.62	27.21	26.05
	Medium	25.60	24.23	24.97	28.00
	Low	0	25.69	30.47	28.36
	Unweighted Means	27.76	25.51	27.55	27.47
IAR	High	18.71	19.33	18.92	17.18
	Medium	18.19	15.73	17.84	18.97
	Low	0	18.18	10.16	17.19
	Unweighted Means	18.45	27.75	19.01	17.78
Giving Help	High	1.98	1.90	1.90	2.09
	Medium	2.06	1.89	1.95	1.94
	Low	0	1.97	2.04	2.06
	Unweighted Means	2.02	1.92	1.96	2.03
Getting Help	High	2.08	1.98	1.93	2.11
	Medium	2.10	1.92	2.00	1.94
	Low	0	2.04	2.16	2.06
	Unweighted Means	2.09	1.98	2.03	2.04

Table VA-R-A3

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and Rewards for Teacher SWF Role Behavior
Year 1

Individual Level Analyses

Source	F^a	p
Grade	1.29	.265
Income (High X Medium ~~+ Low)~~ ~~(Medium X Low)~~	7.28	.001
Program	1.48	.196
Grade X Program	2.51	.029
Income X Program (High X Medium + ~~Low~~) ~~(Medium X Low)~~	1.60	.158
Grade X Income X Program (High X Medium + ~~Low)~~ ~~(Medium X Low)~~	2.29	.045

[a] Degrees of freedom = 5,689

Class Level Analyses

Source	F^a	p
Grade	.25	.935
Income (High X Medium + ~~Low)~~ ~~(Medium X Low)~~	1.85	.148
Program	.72	.617
Grade X Program	.85	.530
Income X Program (High X Medium + ~~Low)~~ ~~(Medium X Low)~~	.91	.493
Grade X Income X Program (High X Medium + ~~Low)~~ ~~(Medium X Low)~~	1.40	.266

[a] Degrees of freedom = 5,21

Tabel VA-R-A4

ANOVA for Student Affective/Social Outcomes for Three-Way Interaction of Grade, Income, and Rewards for Teacher SWF Role Behavior
Year 1

Affective/Social Outcomes	High X Medium + ~~Low~~ Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	1.66	.198		
POQ	.00	.975		
IAR	7.25	.007	EMPTY CELL	
Giving Help	.00	.977		
Getting Help	.43	.512		

[a] Degrees of freedom = 1,693

Table VA-R-A5

ANOVA for Student Affective/Social Outcomes for Two-Way Interaction of Grade and Rewards for Teacher SWF Role Behavior
Year 1

Affective/Social Outcomes	F[a]	p
SOCL	.03	.859
POQ	5.59	.018
IAR	.53	.466
Giving Help	4.09	.044
Getting Help	3.43	.065

[a] Degrees of freedom = 1,693

Table VA-R-A6

ANOVA for Student Affective/Social Outcomes for Main Effects of Income
Year 1

Affective/Social Outcomes	High X Medium + ~~Low~~ Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	1.55	.213	EMPTY CELL	
POQ	30.83	.001		
IAR	8.37	.004		
Giving Help	.46	.498		
Getting Help	.05	.819		

[a] Degrees of freedom = 1,693

(3) Summary Regarding Rewards for SWF Teacher Role Behaviors

Students in Medium Income schools score higher on cognitive outcomes when they are in schools in which faculty members report that teachers are more frequently rewarded for engaging in behaviors appropriate to the SWF program. Grade 4 students in Medium Income schools do better on affective/social outcomes.

High Income school students in Grade 4 tend to do better on cognitive outcomes and may do better on affective/social outcomes in those schools.

Over-all, more benefits tend to accrue to students in High Rewards schools than in schools where teachers are less frequently rewarded.

The distribution of classes suggested that faculty members in High and Medium Income schools appear to report more rewards for SWF teacher role behavior than do faculty members in Low Income schools.

d. Impact of Principal Role Behavior--Score 1

Staff members in each of the schools responded to questionnaire items regarding the activities of the principal. A factor analysis produced three factors. The first of these factors correlated highly with the third factor and the total. The second factor was less highly related to the other two. Therefore, the analyses of principal behavior will be based on the first and second factors.

The data to be discussed in this section come from the analysis based on the first factor. As discussed in the section on measurement (V.A.3.), the first factor was given the label, Collaborative, Facilitative, Performance-oriented Leader. A score was computed for each respondent for this variable based on their description of the frequency with which the principal engaged in the behaviors. Mean scores were computed for each of the schools, and an ANOVA was conducted. There were significant differences among the schools on these scores. The scores were then arrayed from high to low, and the schools were split as near the middle as a natural split in the scores permitted. The two categories of schools thus created were tested for significance of difference between the groups, and there was a significant difference. Student scores were then combined according to which category of school they were in, and a multivariate ANOVA was conducted using the Multivariance Program by Finn.

(1) Data on Cognitive Outcomes

The distribution of students and classes for cognitive outcomes by Grade, Income, and the position of the school on Principal Role Score #1 is provided in Table VA-P1-C1. That distribution indicates some tendency for staff in High Income schools to describe their principals as higher on this score than did the staff of Medium Income schools.

For cognitive outcomes, there are two cells in which data from a single class appear. These are both High Income school classes, and both are in Low Principal Score #1 schools. The class in Grade 4 has outcome scores near the mean for the grade, but generally somewhat above it. There is no evidence of bias in sampling or in data collection. Basically the same situation is true for the class in Grade 5. The Grade 4 class tends to be in the middle for its grade and income set; the Grade 5 class tends toward the high side of that group. This situation does not deny the accuracy of the analyses but does encourage cautious interpretation of the generalizability of the data.

The means, which are based on individual level analyses, are in Table VA-P1-C2.

The MANOVA for both individual and class level analyses are in Table VA-P1-C3. At the individual level of analysis, all are significant except the main effect of Principal Role Score #1. At the class level, only the main effects of Grade and Income, the interaction of

Income and Principal Role Score #1, and the three-way interaction of Grade, Income, and Principal Role Score #1 are significant. On those analyses which are significant at both levels, the univariate results are similar (though, again, fewer are significant at the class level). The patterns of means are quite similar for both levels. The class level provides a more stringent test.

The remainder of the discussion will be based on the analyses at the individual level.

A significant interaction is found among Grade, Income, and Principal Role Score #1 for both income contrasts. The univariate data are in Table VA-P1-C4. Considering the analysis for the High by Medium plus Low Income contrast first, significant effects were obtained for Originality and were approached for Flexibility. Examination of the means indicates quite different results for the student outcomes for each grade and income and, to some extent, outcome. The impact of this independent variable (Principal Role Score #1), varied so as to make it difficult to implement the findings in most school settings.

Turning to the Medium by Low Income contrast, the effect is significant for Unlikely Things. Again, the means indicate no consistent pattern.

There is a significant interaction between Income and Principal Role Score #1 for both income contrasts. For the High by Medium plus Low Income contrast, the effect is significant for Reading and Math Problem Solving. Students in High Income schools may tend to have higher outcomes in schools with a low Principal Role Score #1, while students in Medium and Low Income schools combined may do better in schools with a high score for Principal #1. In the Medium by Low Income contrast, students in Medium Income schools do better on References, Math Problem Solving, and Fluency in schools with low Principal Score #1 while Low Income school students do better in schools with high Principal Score #1.

There is a significant Grade by Principal Role Score #1 interaction. The univariate data are in Table VA-P1-C6. The means suggest that students in Grade 5 may have higher outcome scores in schools low on Principal Role Score #1, while the reverse is true for students in Grade 4. This is clearer on the TTCT than on Reading.

The absence of a main effect for Principal Role Score #1 suggests that it does not have a consistent effect, and that is what the interactions indicated.

The main effects of Income and Grade, shown in Tables VA-P1-C7 and VA-P1-C8, are similar to those reported previously.

To sum up the cognitive outcomes, then, it would appear that Low Income school students benefit from being in schools in which the staff describe the principal as high on Principal Role Score #1. The results for students at other income levels is more mixed, and may tend to be the opposite.

Table VA-P1-C1

Distribution of Students and Classes for Cognitive Outcomes by Grade, Income, and Extent to Which Principal is Seen as a Collaborative, Facilitative, Performance-Oriented Leader (Principal Role Score #1)
Year 1

Individual Level Analyses

Income	Grade 4 Principal Score #1 High	Grade 4 Principal Score #1 Low	Grade 5 Principal Score #1 High	Grade 5 Principal Score #1 Low
High	112	18	67	24
Medium	42	106	40	124
Low	27	37	51	65

Class Level Analyses

Income	Grade 4 Principal Score #1 High	Grade 4 Principal Score #1 Low	Grade 5 Principal Score #1 High	Grade 5 Principal Score #1 Low
High	6	1	4	1
Medium	2	4	2	5
Low	2	2	3	3

Table VA-P1-C2

Student Cognitive Outcome Mean Scores by Grade,
Income, and Principal Role Score #1
Year 1

Cognitive Outcomes	Income	Means			
		Grade 4 Principal Score #1		Grade 5 Principal Score #1	
		High	Low	High	Low
Reading (ITBS)	High	4.15	4.28	4.86	5.57
	Medium	3.58	3.71	4.08	3.74
	Low	3.27	3.20	4.02	3.60
	Unweighted Mean	3.60	3.73	4.32	4.30
References (ITBS)	High	4.05	4.25	4.95	5.36
	Medium	3.55	3.72	4.06	4.50
	Low	3.42	3.12	4.21	3.73
	Unweighted Mean	3.67	3.66	4.41	4.53
Math Problem Solving (ITBS)	High	4.16	4.91	5.04	5.48
	Medium	3.70	3.72	3.99	4.45
	Low	3.50	3.01	4.30	3.54
	Unweighted Mean	3.79	3.88	4.46	4.49
Fluency (TTCT)	High	21.36	28.89	27.96	28.79
	Medium	18.29	24.79	22.38	22.81
	Low	13.44	13.54	25.53	18.38
	Unweighted Mean	17.70	19.07	25.29	23.33
Flexibility (TTCT)	High	10.90	10.17	12.51	13.92
	Medium	9.52	11.20	10.98	10.91
	Low	7.15	7.78	10.92	9.15
	Unweighted Mean	9.19	9.72	11.47	11.33
Originality (TTCT)	High	22.97	17.06	29.43	35.25
	Medium	19.76	28.58	27.30	26.41
	Low	17.00	16.73	30.00	24.34
	Unweighted Mean	19.91	20.79	28.91	28.60
Unlikely Things	High	31.13	28.17	32.25	34.33
	Medium	26.69	29.02	29.30	27.90
	Low	28.59	25.62	26.00	29.28
	Unweighted Mean	28.80	27.60	29.18	30.50

Table VA-P1-C3

Multivariate ANOVA of Student Cognitive Outcomes by Grade,
Income, and Principal Role Score #1
Year 1
Individual Level Analyses

Source	F^a	p
Grade	11.79	.001
Income (High X Medium + Low)	16.08	.001
(Medium X Low)	6.40	.001
Program	.72	.656
Grade X Program	4.05	.002
Income X Program		
(High X Medium + Low)	2.72	.009
(Medium X Low)	5.00	.001
Grade X Income X Program		
(High X Medium + Low)	2.62	.011
(Medium X Low)	4.95	.001

[a] Degrees of freedom = 7,695

Class Level Analyses

Source	F^a	p
Grade	3.08	.027
Income (High X Medium + Low)	4.39	.006
(Medium X Low)	1.39	.271
Program	.22	.974
Grade X Program	1.44	.255
Income X Program		
(High X Medium + Low)	.96	.490
(Medium X Low)	2.76	.041
Grade X Income X Program		
(High X Medium + Low)	1.56	.215
(Medium X Low)	3.07	.028

[a] Degrees of freedom = 7,17

Table VA-P1-C4

ANOVA for Student Cognitive Outcomes for Three-Way Interaction of Grade, Income, and Principal Role Score #1
Year 1

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
Reading	1.74	.187	.62	.430
References	.01	.915	.60	.438
Math Problem Solving	1.28	.258	1.47	.225
Fluency	2.40	.122	.46	.499
Flexibility	3.30	.070	.10	.751
Originality	4.82	.029	1.58	.209
Unlikely Things	1.16	.281	19.21	.001

[a] Degrees of freedom = 1,701

Table VA-P1-C5

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income and Principal Role Score #1
Year 1

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
Reading	7.28	.007	.26	.611
References	1.49	.222	8.49	.004
Math Problem Solving	8.50	.004	12.25	.001
Fluency	.06	.810	6.81	.009
Flexibility	.12	.728	2.08	.149
Originality	.00	.975	3.04	.082
Unlikely Things	.32	.574	.27	.606

[a] Degrees of freedom = 1,701

Table VA-P1-C6

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Grade and Principal Role Score #1
Year 1

Cognitive Outcomes	F[a]	p
Reading	5.64	.018
References	.11	.745
Math Problem Solving	.77	.381
Fluency	10.01	.002
Flexibility	4.05	.045
Originality	4.13	.043
Unlikely Things	.14	.707

[a] Degrees of freedom = 1,701

Table VA-P1-C7

ANOVA for Student Cognitive Outcomes for Main Effects of Income
Year 1

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	65.13	.001	3.60	.058
References	43.49	.001	13.92	.001
Math Problem Solving	58.40	.001	15.47	.001
Fluency	7.95	.005	12.77	.001
Flexibility	15.43	.001	14.59	.001
Originality	1.12	.289	3.76	.053
Unlikely Things	52.24	.001	1.98	.160

[a] Degrees of freedom = 1,701

Table VA-P1-C8

ANOVA for Student Cognitive Outcomes for Main Effects of Grade Year 1

Cognitive Outcomes	F[a]	p
Reading	25.02	.001
References	72.06	.001
Math Problem Solving	52.74	.001
Fluency	15.05	.001
Flexibility	10.91	.001
Originality	12.76	.001
Unlikely Things	2.99	.084

[a] Degrees of freedom = 1,701

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(2) Data on Affective/Social Outcomes

The distribution of students for these outcomes is shown in Table VA-P1-A1. Single class cells: (1) the class in Grade 4, High Income, Low Principal Score #1, tends to be in the middle of its grade and income set on many of the affective/social outcomes; (2) the class in Grade 5, High Income, Low Principal Score #1 tends to be above the middle, but not the top, of its grade and income set; (3) the class in Grade 5, Low Income, Low Principal Score #1 cell tends to have high outcome scores for its grade and income set; and (4) the class in Grade 4 Low Income Low Principal Role Score #1 is high in its grade and income set on the SOCL, the POQ, Giving Help, and Getting Help; it is in the middle on the IAR. There is no evidence that these classes were biased in selection or in data collection. However, having a single class in those cells does suggest caution in generalizing the data.

The mean scores for individual level analyses are in Table VA-P1-A2. The MANOVA results for both individual and class levels of analyses are in Table VA-P1-A3. None of the analyses at the class level is significant. The pattern of significant analyses at the individual level suggests that the Medium by Low Income contrast is involved in the most significant findings.

The remainder of the discussion will be based on the individual level analyses.

There is a significant three-way interaction for Grade by Income (Medium by Low contrast) by Principal Role Score #1. The effects are significant for the IAR and close enough on Getting Help. (See Table VA-P1-A4.) Examination of the means reflects great variation across the factors. In Grade 4, students in High Income schools which are high on Principal Role Score #1 appear to have higher outcome scores on four of five outcomes. Students in Grade 4 in Low Income schools which are Low on Principal Role Score #1 appear to have higher scores on all five outcomes. Medium Income school students have mixed results in both grades, as do High and Low Income school students in Grade 5.

Table VA-P1-C3 indicates a significant interaction for Income (Medium by Low) and Principal Role Score #1. (Univariate data are in Table VA-P1-A5.) However, the results appear to be in opposite directions for the two outcomes. On the IAR, Medium Income school students are higher in Low Principal Score #1 schools, while Low Income school students are higher in High Principal Role Score #1 schools. The reverse is true for the SOCL. These findings reinforce an interpretation of varied effects of the position of the school on Principal Role Score #1.

The significant main effect for Income is the same as was discussed above. Univariate data are in Table VA-P1-C6.

Putting together the results for affective/social outcomes for this organizational measure seems to add up to its having a variety of effects which do not provide a consistent pattern to permit statements about the implementation of the kinds of activities by the principal that contribute to Principal Score #1. They do not encourage an expectation that particular student affective/social outcomes are more likely than others.

(3) Summary on Principal Score #1

Student outcomes resulting from the analysis of the effects of having a principal described as collaborative, facilitative, and performance-oriented are quite mixed on both cognitive and affective/social measures. There does not appear to be a basis for predicting the impact of implementation of this condition on student outcomes from the data here analyzed.

Table VA-P1-A1

Distribution of Students and Classes for Affective/Social Outcomes by Grade, Income, and Extent to which Principal is Seen as a Collaborative, Facilitative, Performance-Oriented Leader
(Principal Role Score #1)
Year 1

Individual Level Analyses

Income	Grade 4		Grade 5	
	Principal Score #1		Principal Score #1	
	High	Low	High	Low
High	108	18	69	22
Medium	40	95	37	120
Low	26	13	34	62

Class Level Analyses

Income	Grade 4		Grade 5	
	Principal Score #1		Principal Score #1	
	High	Low	High	Low
High	6	1	4	1
Medium	2	4	2	5
Low	2	1	2	3

Table VA-P1-A2

Student Affective/Social Outcome Mean Scores by Grade, Income, and Principal Role Score #1
Year 1

Affective/ Social	Income	Means			
		Grade 4		Grade 5	
		Principal Score #1		Principal Score #1	
		High	Low	High	Low
SOCL	High	61.49	62.22	60.13	61.77
	Medium	59.83	60.69	62.70	60.61
	Low	57.35	59.92	59.09	60.32
	Unweighted Means	59.56	60.94	60.64	60.90
POQ	High	29.76	28.33	26.49	26.05
	Medium	26.63	24.85	24.68	25.97
	Low	24.58	27.92	27.65	29.40
	Unweighted Means	26.99	27.03	26.27	27.14
IAR	High	18.95	18.39	18.33	17.18
	Medium	17.98	17.72	16.84	18.49
	Low	17.92	18.69	18.85	17.23
	Unweighted Means	18.28	18.27	18.01	17.63
Giving Help	High	2.00	1.84	1.90	2.09
	Medium	2.00	2.04	1.94	1.95
	Low	1.86	2.21	2.05	2.06
	Unweighted Means	1.95	2.02	1.96	2.03
Getting Help	High	2.04	1.95	1.91	2.11
	Medium	2.09	2.07	1.94	2.00
	Low	1.91	2.31	2.06	2.09
	Unweighted Means	2.01	2.13	1.97	2.07

Table VA-P1-A3

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and Principal Role Score #1

Year 1

Individual Level Analyses

Source	F[a]	p
Grade	.96	.444
Income (High X Medium + Low)	2.67	.024
(Medium X Low)	5.13	.001
Program	.73	.604
Grade X Program	1.63	.149
Income X Program		
(High X Medium + Low)	.94	.457
(Medium X Low)	3.36	.005
Grade X Income X Program		
(High X Medium + Low)	1.68	.137
(Medium X Low)	2.76	.018

[a] Degrees of freedom = 5,628

Class Level Analyses

Source	F[a]	p
Grade	.15	.978
Income (High X Medium + Low)	2.36	.084
(Medium X Low)	1.98	.133
Program	.19	.962
Grade X Program	.39	.851
Income X Program		
(High X Medium + Low)	.38	.858
(Medium X Low)	.83	.545
Grade X Income X Program		
(High X Medium + Low)	.43	.819
(Medium X Low)	.95	.473

[a] Degrees of freedom = 5,17

Table VA-P1-A4

ANOVA for Student Affective/Social Outcomes for Three-Way Interaction of Grade, Income, and Principal Role Score #1
Year 1

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	NOT SIGNIFICANT		.08	.771
POQ			2.98	.085
IAR			8.31	.004
Giving Help			1.12	.290
Getting Help			3.80	.052

[a] Degrees of freedom = 1,632

Table VA-P1-A5

ANOVA for Student Affective/Social Outcomes for Two-Way Interaction of Income by Principal Role Score #1
Year 1

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	NOT SIGNIFICANT		3.72	.054
POQ			3.24	.073
IAR			5.85	.016
Giving Help			.93	.335
Getting Help			1.60	.206

[a] Degrees of freedom = 1,632

Table VA-P1-A6

ANOVA for Student Affective/Social Outcomes for Main Effects of Income
Year 1

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	4.16	.042	4.46	.035
POQ	8.84	.003	11.84	.001
IAR	2.26	.133	.02	.898
Giving Help	.16	.691	1.32	.252
Getting Help	.33	.563	1.73	.189

[a] Degrees of freedom = 1,632

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e. Impact of Principal's Behavior--Score 2

As indicated in the section above, there were two measures of principal role behavior which were used in the analyses. The second measure was given the label, Accepting, Easy to Work With, and is referred to here as Principal's Role Score 2. The preparation for the multivariate ANOVA was the same here as in the preceding section.

(1) Data on Cognitive Outcomes

The distributions of students and classes by Grade, Income, and Principal Score #2 are shown in Table VA-P2-C1. All of the cells have more than one class. The means for the individual level analyses are in Table VA-P2-C2.

The results of the MANOVA at both individual and class levels of analyses are in Table VA-P2-C3. While all the analyses except the main effects of Principal Score #2 are significant at the individual level, only Grade and Income (High by Medium plus Low contrast) main effects are significant at the class level. The means for the two sets of analyses are quite similar, especially in the pattern of apparent high scores. It appears that the class level analyses provide a more demanding test for significance.

The remainder of the discussion will be based on individual level analyses.

Table VA-P2-C3 indicates that there are significant interactions of Grade, Income, and Principal Score #2 for both income contrasts. Considering the High by Medium plus Low Income contrast first, Table VA-P2-C4 shows that the effect is significant for References and Unlikely Things. On both outcomes, students in Grade 5 High Income schools in which there is a High Principal Score #2 have higher scores than similar students in Low Principal Score #2 schools. The results for Grade 4 and for Medium and Low Income school students appear to be mixed.

The contrast of Medium with Low income data, also shown in Table VA-P2-C4, indicate a significant effect on Unlikely Things. The means in Table VA-P2-C2 show Medium Income students in Grade 4 schools with a Low Principal Score #2 having higher scores than students in High Principal Score #2 schools. The reverse is true for Low Income High Principal Score #2 school students. In Grade 5, the difference for Medium Income school students is probably not significant, and the results for Low Income school students is reversed from Grade 4.

Noting that there is a significant interaction of Income by Principal Score #2 and for Grade by Principal Score #2 (see Table VA-P2-C5 and C6), it is well to examine carefully the whole means table. If the apparent high mean score in each program comparison (for Grade, Income, and outcome) is identified, the following results appear. Medium Income school students in both grades tend to score higher when in Low Principal Score #2 schools than when in High Score #2 schools. Low Income school students in both grades tend to score higher in High Principal Score #2 schools. High Income school students have mixed results in Grade 4 but appear to have higher scores in Grade 5 when in High Principal Score #2 schools.

Grade and Income main effects are much as would be expected on cognitive outcomes: Grade 5 students are higher than Grade 4. Students in High Income schools are (usually) higher than students in Medium Income schools who are higher (generally) than students in Low Income schools. See Tables VA-P2-C7 and -C8.

To summarize the cognitive outcome results, students in Medium Income schools tend to do better in low Principal Score #2 schools, while students in Low Income schools tend to do better in schools with high Principal Score #2. Students in High Income schools have mixed results in Grade 4 but appear to have higher scores in high Principal Score #2 schools in Grade 5.

Table VA-P2-C1

Distribution of Students and Classes for Cognitive Outcomes by Grade, Income, and Principal Role Score #2

Year 1

Individual Level Analyses

Income	Grade 4 Principal Score #2		Grade 5 Principal Score #2	
	High	Low	High	Low
High	100	30	58	33
Medium	42	106	57	107
Low	27	37	51	65

Class Level Analyses

Income	Grade 4 Principal Score #2		Grade 5 Principal Score #2	
	High	Low	High	Low
High	5	2	3	2
Medium	2	4	3	4
Low	2	2	3	3

Table VA-P2-C2

Student Cognitive Outcome Mean Scores by Grade, Income, and Principal Role Score #2

Year 1

Cognitive Outcomes	Income	Means			
		Grade 4		Grade 5	
		Principal Sc#2		Principal Sc#2	
		High	Low	High	Low
Reading (ITBS)	High	4.22	3.99	5.29	4.62
	Medium	3.58	3.71	3.90	3.78
	Low	3.27	3.20	4.02	3.60
	Unweighted Mean	3.69	3.63	4.40	3.80
References (ITBS)	High	4.08	4.04	5.34	4.55
	Medium	3.55	3.72	4.11	4.54
	Low	3.42	3.12	4.21	3.73
	Unweighted Mean	3.68	3.63	4.55	4.27
Math Problem Solving (ITBS)	High	4.24	4.34	5.31	4.90
	Medium	3.70	3.72	4.08	4.47
	Low	3.50	3.01	4.30	3.54
	Unweighted Mean	3.81	3.69	4.56	4.30
Fluency (TTCT)	High	20.79	21.77	29.83	25.27
	Medium	18.29	24.79	20.58	23.84
	Low	13.44	13.54	25.53	18.38
	Unweighted Mean	17.51	20.03	25.31	22.50
Flexibility (TTCT)	High	10.48	11.87	13.60	11.61
	Medium	9.52	11.20	10.04	11.40
	Low	7.15	7.78	10.92	9.15
	Unweighted Mean	9.05	10.28	11.52	10.72
Originality (TTCT)	High	20.97	26.10	32.57	28.15
	Medium	19.76	28.58	25.07	27.46
	Low	17.00	16.73	30.00	24.34
	Unweighted Mean	19.24	23.80	29.21	26.65
Unlikely Things	High	30.71	30.73	34.29	30.18
	Medium	26.69	29.02	28.11	28.32
	Low	28.59	25.62	26.00	29.28
	Unweighted Mean	28.66	28.46	29.46	29.26

Table VA-P2-C3

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and Principal Role Score #2

Year 1

Individual Level Analyses

Source	F^a	p
Grade	11.92	.001
Income (High X Medium + Low)	16.20	.001
(Medium X Low)	6.60	.001
Program	1.72	.102
Grade X Program	2.12	.040
Income X Program		
(High X Medium + Low)	2.77	.008
(Medium X Low)	4.98	.001
Grade X Income X Program		
(High X Medium + Low)	2.13	.039
(Medium X Low)	3.72	.001

[a] Degrees of freedom = 7,695

Class Level Analyses

Source	F^a	p
Grade	2.78	.040
Income (High X Medium + Low)	5.06	.003
(Medium X Low)	1.09	.414
Program	1.11	.399
Grade X Program	.38	.902
Income X Program		
(High X Medium + Low)	.89	.532
(Medium X Low)	1.50	.234
Grade X Income X Program		
(High X Medium + Low)	1.69	.179
(Medium X Low)	1.85	.143

[a] Degrees of freedom = 7,17

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Table VA-P2-C4

ANOVA for Student Cognitive Outcomes for Three-Way Interaction of Grade, Income, and Principal Role Score #2
Year 1

Cognitive Outcomes	High X Medium + Low Income F[a]	p	Medium X Low Income F[a]	p
Reading	.49	.486	.07	.787
References	4.71	.030	.83	.363
Math Problem Solving	2.44	.119	1.35	.246
Fluency	.04	.836	.00	.995
Flexibility	1.40	.237	.27	.603
Originality	.23	.635	.45	.505
Unlikely Things	6.94	.009	13.46	.001

[a] Degrees of freedom = 1,701

Table VA-P2-C5

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income and Principal Role Score #2
Year 1

Cognitive Outcomes	High X Medium + Low Income F[a]	p	Medium X Low Income F[a]	p
Reading	2.27	.132	1.21	.271
References	3.81	.051	8.93	.003
Math Problem Solving	.00	.945	12.46	.001
Fluency	1.89	.169	11.61	.001
Flexibility	1.20	.274	5.29	.022
Originality	.34	.558	5.08	.025
Unlikely Things	7.99	.005	.00	.968

[a] Degrees of freedom = 1,701

Table VA-P2-C6

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Grade and Principal Role Score #2
Year 1

Cognitive Outcomes	F[a]	p
Reading	6.96	.009
References	1.44	.230
Math Problem Solving	.95	.329
Fluency	10.21	.002
Flexibility	7.10	.008
Originality	8.53	.004
Unlikely Things	.71	.400

[a] Degrees of freedom = 1,701

Table VA-P2-C7

ANOVA for Student Cognitive Outcomes for Main Effects of Income
Year 1

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	62.94	.001	4.21	.041
References	38.96	.001	15.76	.001
Math Problem Solving	53.50	.001	16.97	.001
Fluency	9.12	.003	12.61	.001
Flexibility	17.04	.001	14.67	.001
Originality	1.44	.230	3.65	.057
Unlikely Things	53.67	.001	2.28	.132

[a] Degrees of freedom = 1,701

Table VA-P2-C8

ANOVA for Student Cognitive Outcomes for Main Effects of Grade Year 1

Cognitive Outcomes	F[a]	p
Reading	25.08	.001
References	73.87	.001
Math Problem Solving	52.95	.001
Fluency	15.12	.001
Flexibility	11.13	.001
Originality	12.90	.001
Unlikely Things	3.20	.074

[a] Degrees of freedom = 1,701

(2) Data on Affective/Social Outcomes

The distribution of students for this analysis is shown in Table VA-P2-A1. In this analysis, there is one cell with a single class. It is the Grade 4 Low Income Low Principal Score #2 cell. This class is in the middle of the distribution for its grade on affective outcomes and is high on Giving Help and Getting Help. There is no evidence of bias in selection or in data collection. Generalization of results to other settings, based on the analyses involving this cell, should be done with caution.

The means based on individual level analyses are in Table VA-P2-A2. The MANOVA results for analyses at both individual and class levels are in Table VA-P2-A3. There are, as usual, fewer significant in the class level analyses. In addition, it appears that the High by Medium plus Low Income contrast provides higher F ratios in the class level, while the reverse tends to be true for the Income main effects and Income by Principal Score #2 analyses at the individual level. Since the means tables for the two levels of analysis are quite similar, this result must come from the differences in number of cases and the variance.

The remainder of the discussion will be based on individual level analyses.

There is a significant three-way interaction of Grade, Income (High by Medium plus Low Income) by Principal Score #2. The effect is significant for the POQ only (see Table VA-P2-A4). The means suggest that High Income students in Grade 4 score higher on the POQ in Low Principal Role Score #2 schools, while High Income students in Grade 5 score higher in High Principal Role Score #2 schools. Considering the Medium and Low Income school students combined, it appears that those in Grade 4 may score higher in Low Principal Role Score #2 schools and that those in Grade 5 may score about the same in either High or Low Principal Role Score #2 schools.

A significant interaction of Income with Principal Role Score #2 was found for both Income contrasts. The univariate results are in Table VA-P2-A5. The effects of the High by Medium plus Low Income contrast are significant for the SOCL and the POQ. Significance is nearly reached for Giving Help. Means data indicate that students in High Income schools which are High on Principal Role Score #2 tend to have higher outcome scores than students in Low Score #2 schools.

Turning to the second contrast, Medium by Low Income, the interaction with Score #2 produces a significant effect for the POQ and the IAR. On the POQ, at both grade levels, Medium Income school students score higher in High Score #2 schools, while Low Income school students score higher in Low Score #2 schools. On the IAR, the results in Grade 4 are the same, but they are reversed in Grade 5.

The main effects of income are in Table VA-P2-A6. The effect for the High by Medium plus Low Income contrast is significant for the POQ. Students in High Income schools have more favorable attitudes toward school than students in Medium and Low Income schools combined. For the Medium by Low Income contrast, the effect is significant for the SOCL and the POQ. On the SOCL, Medium Income school students score higher; on the POQ, Low Income school students score higher.

Giving attention to the mean score data, some suggestive information seems to help make sense of the interactions discussed so far. In High Income schools, in Grade 4, students in High Principal Score #2 schools have apparently higher scores on three of six outcomes and about the same on two others as students in Low Score #2 schools. In Grade 5, students in High Income schools which are High on Score #2 appear to have higher scores on four of six scores and about the same on one. These findings indicate that High Income school students are likely to do better in High Principal Score #2 schools. Students in Grade 4 in Low Income schools appear to have higher scores in five of six outcomes if they are in Low Principal Score #2 schools. Other Grade and Income combinations seem to be quite scattered.

Those statements seem to summarize the data for the affective/social outcomes. The absence of a significant program main effect fits the pattern of means.

(3) Summary on Principal Score #2

Students in Medium Income schools are likely to have higher cognitive outcomes in Low Principal Score #2 schools. Students in Low Income schools are likely to have higher cognitive outcomes in High Principal Score #2 schools. Grade 5 High Income students are likely to score higher in High Score #2 schools on cognitive outcomes.

High Income school students tend to score higher on affective/social outcomes when in High Score #2 schools. Low Income students in Grade 4 score higher in Low Score #2 schools.

On balance, it appears that students may be better off in schools in which the principal is characterized as accepting and easy to work with.

Table VA-P2-A1

Distribution of Students and Classes for Affective/Social Outcomes by Grade, Income, and Principal Role Score #2

Year 1

Individual Level Analyses

Income	Grade 4		Grade 5	
	Principal Score #2		Principal Score #2	
	High	Low	High	Low
High	96	30	58	33
Medium	40	95	55	102
Low	26	13	34	62

Class Level Analyses

Income	Grade 4		Grade 5	
	Principal Score #2		Principal Score #2	
	High	Low	High	Low
High	5	2	3	2
Medium	2	4	3	4
Low	2	1	2	3

Table VA-P2-A2 .

Student Affective/Social Outcome Mean Scores by Grade, Income, and Principal Role Score 2 Year 1

Affective/ Social	Income	Means			
		Grade 4		Grade 5	
		Principal Score 2		Principal Score 2	
		High	Low	High	Low
SOCL	High	61.79	60.97	61.81	58.27
	Medium	59.83	60.69	61.45	60.91
	Low	57.35	59.92	59.09	60.32
	Unweighted Means	59.66	60.53	60.78	59.83
POQ	High	29.04	31.20	28.93	21.91
	Medium	26.62	24.85	26.53	25.20
	Low	24.58	27.92	27.65	29.40
	Unweighted Means	26.75	27.99	27.70	25.50
IAR	High	19.06	18.27	17.88	18.36
	Medium	17.98	17.72	17.45	18.45
	Low	17.92	18.69	18.85	17.23
	Unweighted Means	18.32	18.23	18.06	18.01
Giving Help	High	1.99	1.93	2.01	1.84
	Medium	2.00	2.04	1.95	1.95
	Low	1.86	2.21	2.05	2.06
	Unweighted Means	1.95	2.06	2.00	1.95
Getting Help	High	2.03	2.04	2.01	1.86
	Medium	2.09	2.07	1.98	2.00
	Low	1.91	2.31	2.06	2.09
	Unweighted Means	2.01	2.14	2.02	1.98

Table VA-P2-A3

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and Principal Role Score #2

Year 1

Individual Level Analyses

Source	F[a]	p
Grade	.87	.504
Income (High X Medium + Low)	2.46	.032
(Medium X Low)	4.98	.001
Program	.51	.765
Grade X Program	1.33	.249
Income X Program		
(High X Medium + Low)	2.59	.025
(Medium X Low)	4.82	.001
Grade X Income X Program		
(High X Medium + Low)	2.25	.048
(Medium X Low)	1.92	.089

[a] Degrees of freedom = 5,628

Class Level Analyses

Source	F[a]	p
Grade	.13	.983
Income (High X Medium + Low)	3.28	.030
(Medium X Low)	1.98	.133
Program	.75	.600
Grade X Program	1.27	.321
Income X Program		
(High X Medium + Low)	2.80	.051
(Medium X Low)	1.47	.252
Grade X Income X Program		
(High X Medium + Low)	2.31	.090
(Medium X Low)	.78	.578

[a] Degrees of freedom = 5,17

Table VA-P2-A4

ANOVA for Student Affective/Social Outcomes for Three-Way Interaction of Grade by Income by Principal Score #2
Year 1

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	.03	.855	NOT SIGNIFICANT	
POQ	7.15	.008		
IAR	1.12	.290		
Giving Help	.09	.764		
Getting Help	.12	.731		

[a] Degrees of freedom = 1,632

Table VA-P2-A5

ANOVA for Student Affective/Social Outcomes for Two-Way Interaction of Income and Principal Role Score #2
Year 1

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	8.33	.004	2.39	.122
POQ	5.42	.020	11.11	.001
IAR	.04	.846	4.15	.042
Giving Help	3.55	.060	1.38	.241
Getting Help	2.72	.100	2.64	.105

[a] Degrees of freedom = 1,632

Table VA-P2-A6

ANOVA for Student Affective/Social Outcomes for Main Effects of Income Year 1

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	2.11	.147	5.55	.019
POQ	7.00	.008	10.77	.001
IAR	2.96	.086	.01	.938
Giving Help	.75	.387	.95	.330
Getting Help	1.39	.239	1.20	.273

[a] Degrees of freedom = 1,632

f. Impact of Staff Problem Solving

Staff members in the schools were asked to describe the problem solving procedures followed in their schools. (See section V.A.3. for a discussion of this measure.) Three scores were obtained, based on a factor analysis of those items in the questionnaire which concerned staff problem solving. The scores reflected factors named Constrained Participation (reversed); Effective, Involved Problem Solving; and Disorganized, Irrelevant, and Indecisive (reversed). These scores were summed, and the total score used in the analyses. Thus, High Staff Problem Solving referred to activities which could be characterized as having unconstrained participation; effective, involved problem solving; and as organized, relevant, and decisive.

That score was computed for each respondent, and a mean generated for each school. An analysis of variance was done on these scores (for each school), and significant differences were found among schools. Schools were then arrayed from high to low on this mean score, and each school was assigned to the high or low category by splitting the schools as near the middle as a division in the scores permitted. Student outcome scores were then analyzed in the multivariate design, using Grade, Income, and Staff Problem Solving Effectiveness as factors.

(1) Data on Cognitive Outcomes

The distribution of students and classes for cognitive outcomes is provided in Table VA-PS-C1. Those numbers indicate again the tendency of staff members in High Income schools to describe their activities more frequently in ways which are expected to enhance the SWF program than do members of Medium and Low Income schools. There are two cells which are represented by single classes. In Grade 4, High Income, Low Staff Problem Solving, the outcome scores tend to be somewhat above the mean for the grade but in the middle of the scores for its grade and income set. The other cell is in Grade 5 High Income Low Staff Problem Solving. That class tends to be above the grade mean and above the middle of its grade and income set. There is no evidence of bias in selection or in data collection for those classes.

Mean scores based on individual level analyses are in Table VA-PA-C2. The results of the MANOVA at both individual and class levels of analyses are in Table VA-PS-C3. While everything except the main effects of Staff Problem Solving was significant in the individual level analyses, most of the interactions were not significant at the class level. In some cells with two classes, there were differences in size of class and in class scores which had some impact on means and variances. However, the patterns of means for the two sets of analyses are quite similar.

The remainder of the discussion is based on the analyses done at the individual level.

The three-way interaction of Grade by Income by Staff Problem Solving was significant for both income contrasts. The univariate data are in Table VA-PS-C4. At the High by Medium plus Low Income contrast, the effect is significant for Flexibility and Originality. The thrust of those complex results is the Grade 4 High Income school students had higher scores in high Staff Problem Solving schools, while Medium and Low Income school students in that grade did better in low Staff Problem Solving schools. The opposite appears to be true in Grade 5. The univariate results are in Table VA-PS-C4.

The Income by Staff Problem Solving interactions are also significant. For the High by Medium plus Low Income contrast, the effect is significant for Math Problem Solving. (See Table VA-PS-C5.) Students in High Income schools have higher scores in low Staff Problem Solving schools; students in Medium and Low Income schools combined tend to do better in schools high in Staff Problem Solving.

For the Medium by Low Income contrast, the effect is significant for References, Math Problem Solving, and Fluency. The general trend in those outcomes is for Medium Income school students to do better in low Staff Problem Solving schools, while Low Income school students do better in high Staff Problem Solving schools.

The Grade by Staff Problem Solving interaction is also significant. The effect is significant for Reading and Fluency, as shown in Table VA-PS-C6. Examination of the means indicates that students in Grade 5 and schools high in Staff Problem Solving do better on Reading, while students in Grade 4 in schools low on Staff Problem Solving do least well. On Fluency, the students in Grade 5 in schools high on Staff Problem Solving do better; students in Grade 4 in schools low on Staff Problem Solving do better.

The main effects of Grade and Income are the same as in previous analyses. Students in Grade 5 have higher outcomes. Students in High Income schools tend to have higher outcome scores than students in Medium Income schools who tend to have higher outcome scores than students in Low Income schools. The univariate data are in Table VA-PS-C7 and -C8.

To sum up the cognitive data, students in Low Income schools seem to be better off in schools high on Staff Problem Solving. The results for other students are quite mixed. It would be hard to argue from these data that being in a school either high or low on Staff Problem Solving is likely to have consistent consequences.

Table VA-PS-C1

Distribution of Students and Classes for Cognitive Outcomes by Grade, Income, and Staff Problem Solving

Year 1

Individual Level Analyses

Income	Grade 4 Staff Problem Solv. High	 Low	Grade 5 Staff Problem Solv. High	 Low
High	155	18	86	24
Medium	42	106	40	124
Low	27	37	51	65

Class Level Analyses

Income	Grade 4 Staff Problem Solv. High	 Low	Grade 5 Staff Problem Solv. High	 Low
High	8	1	5	1
Medium	2	4	2	5
Low	2	2	3	3

Table VA-PS-C2

Student Cognitive Outcome Mean Scores by Grade, Income, and Staff Problem Solving Year 1

Cognitive Outcomes	Income	Means Grade 4 Staff Prob. Solv. High	 Low	 Grade 5 Staff Prob. Solv. High	 Low
Reading (ITBS)	High	4.32	4.28	5.15	5.57
	Medium	3.58	3.71	4.08	3.74
	Low	3.27	3.20	4.02	3.60
	Unweighted Mean	3.72	3.73	4.42	4.30
References (ITBS)	High	4.24	4.15	5.31	5.36
	Medium	3.55	3.72	4.06	4.50
	Low	3.42	3.12	4.21	3.73
	Unweighted Mean	3.74	3.66	4.53	4.53
Math Problem Solving (ITBS)	High	4.29	4.91	5.31	5.48
	Medium	3.70	3.72	3.99	4.45
	Low	3.50	3.01	4.30	3.54
	Unweighted Mean	3.83	3.88	4.53	4.49
Fluency (TTCT)	High	21.58	18.89	27.23	28.79
	Medium	18.29	24.79	22.38	22.81
	Low	13.44	13.54	25.53	18.38
	Unweighted Mean	17.77	19.07	25.05	23.33
Flexibility (TTCT)	High	11.33	10.17	12.58	13.92
	Medium	9.52	11.20	10.98	10.91
	Low	7.15	7.78	10.92	9.15
	Unweighted Mean	9.30	9.72	11.49	11.33
Originality (TTCT)	High	23.03	17.06	27.55	35.25
	Medium	19.76	28.58	27.30	26.41
	Low	17.00	16.73	30.00	24.34
	Unweighted Mean	19.93	20.79	28.28	28.60
Unlikely Things	High	31.47	28.17	32.41	34.33
	Medium	26.69	29.02	29.30	27.90
	Low	28.59	25.62	26.00	29.28
	Unweighted Mean	28.92	27.60	29.24	39.74

Table VA-PS-C3

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and Staff Problem Solving
Year 1

Individual Level Analyses

Source	F^a	p
Grade	14.00	.001
Income (High X Medium + Low)	21.41	.001
(Medium X Low)	6.52	.001
Program	.74	.639
Grade X Program	4.49	.001
Income X Program		
(High X Medium + Low)	2.23	.031
(Medium X Low)	4.95	.001
Grade X Income X Program		
(High X Medium + Low)	3.48	.001
(Medium X Low)	4.96	.001

[a] Degrees of freedom = 7,757

Class Level Analyses

Source	F^a	p
Grade	3.90	.008
Income (High X Medium + Low)	5.36	.002
(Medium X Low)	1.62	.188
Program	.24	.971
Grade X Program	1.73	.158
Income X Program		
(High X Medium + Low)	1.03	.444
(Medium X Low)	2.97	.026
Grade X Income X Program		
(High X Medium + Low)	1.72	.161
(Medium X Low)	3.45	.014

[a] Degrees of freedom = 7,20

Table VA-PS-C4

ANOVA for Student Cognitive Outcomes for Three-Way Interaction of Grade, Income, and Staff Problem Solving

Year 1

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	.63	.428	.63	.427
References	.57	.452	.52	.472
Math Problem Solving	2.63	.105	1.37	.242
Fluency	3.38	.067	.46	.498
Flexibility	4.42	.036	.09	.758
Originality	7.03	.008	1.62	.203
Unlikely Things	1.20	.273	19.48	.001

[a] Degrees of freedom = 1,763

Table VA-PS-C5

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income by Staff Problem Solving

Year 1

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	3.11	.078	.19	.660
References	.01	.914	7.58	.006
Math Problem Solving	4.66	.032	11.43	.001
Fluency	.03	.874	7.29	.007
Flexibility	.01	.918	2.23	.136
Originality	.04	.837	3.43	.065
Unlikely Things	.64	.425	.26	.609

[a] Degrees of freedom = 1,763

Table VA-PS-C6

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of
Grade by Staff Problem Solving
Year 1

Cognitive Outcomes	F[a]	p
Reading	7.55	.007
References	.75	.388
Math Problem Solving	1.83	.177
Fluency	9.06	.003
Flexibility	2.92	.088
Originality	2.81	.095
Unlikely Things	.21	.645

[a] Degrees of freedom = 1,763

Table VA-PS-C7

ANOVA for Student Cognitive Outcomes for Main Effects
of Income
Year 1

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
Reading	88.66	.001	3.84	.050
References	69.35	.001	14.22	.001
Math Problem Solving	78.81	.001	15.86	.001
Fluency	8.47	.004	13.17	.001
Flexibility	20.67	.001	14.70	.001
Originality	.66	.418	3.76	.053
Unlikely Things	64.09	.001	2.04	.154

[a] Degrees of freedom = 1,763

Table VA-PS-C8

ANOVA for Student Cognitive Outcomes for Main Effects of Grade
Year 1

Cognitive Outcomes	F[a]	p
Reading	31.27	.001
References	83.73	.001
Math Problem Solving	63.54	.001
Fluency	16.10	.001
Flexibility	10.27	.002
Originality	12.02	.001
Unlikely Things	2.92	.088

[a] Degrees of freedom = 1,763

(2) Data on Affective/Social Outcomes

Table VA-PS-A1 presents the distribution of students for affective/social outcome data. There are three single class cells. In Grade 4, High Income, Low Staff Problem Solving, the class tends to be above the grade mean and in the middle of its grade and income set. In Grade 4, Low Income, Low Staff Problem Solving, the class tends to be somewhat above grade mean on affective outcome scores and high in its grade and income set. It is high on social outcomes. In Grade 5, High Income, Low Staff Problem Solving, the class tends to be above the grade mean and in the middle of its grade and income set on affective/social outcomes. There is no evidence of bias in selection or data collection for these classes.

The outcome means based on individual level analyses are in Table VA-PS-A2. The MANOVA results for analyses at both the individual and class levels are in Table VA-PS-A3. The main differences between the two sets of analyses seems to involve the Medium by Low Income contrast as a main effect and in two interactions. The means for the two sets are quite similar in amounts and in patterns.

The remainder of the discussion will be based on the individual level analyses.

A significant three-way interaction for Grade, Income (Medium by Low), and Staff Problem Solving is shown. Table VA-PS-A4 shows the effects are significant for the IAR and for Getting Help. Significance is approached for the POQ. Examination of the means in Table VA-PS-A2 illustrate the differential impact of grade and program and income such that the high mean in a given High or Low Staff Problem Solving pair (by grade and income) changes as attention is shifted from one income level to another and one grade to another.

It is possible to see some tendencies (in the means) in Grade 4, where High Income school students appear to have higher mean outcome scores on four of the five measures in High Staff Problem Solving schools, and where Low Income school students seem to have higher outcome scores in Low Staff Problem Solving schools. Results in Grade 5 are very mixed.

Given these findings, the other significant interactions shown in Table VA-PS-C3 do not seem to provide additional understanding. (However, the univariate data for the interaction of Income with Staff Problem Solving are provided in Table VA-PS-C5, and the data for Income main effects are in Table VA-PS-A6.)

The significant main effect for income was discussed in Question 1 above.

To sum up the affective/social outcomes, the analysis does not give a clear indication of the effects of Staff Problem Solving. It would appear that there is no consistent indication of help or harm for students.

Table VA-PS-A1

Distribution of Students and Classes for Affective/Social Outcomes by Grade, Income, and Staff Problem Solving

Year 1

Individual Level Analyses

Income	Grade 4		Grade 5	
	Staff Problem Solv.		Staff Problem Solv.	
	High	Low	High	Low
High	150	18	87	22
Medium	40	95	37	120
Low	26	13	34	62

Class Level Analyses

Income	Grade 4		Grade 5	
	Staff Problem Solv.		Staff Problem Solv.	
	High	Low	High	Low
High	8	1	5	1
Medium	2	4	2	5
Low	2	1	2	3

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Table VA-PS-A2 .

Student Affective/Social Outcome Mean Scores by Grade, Income, and Staff Problem Solving
Year 1

Affective/ Social	Income	Means			
		Grade 4		Grade 5	
		Staff Problem Solv.		Staff Problem Solv.	
		High	Low	High	Low
SOCL	High	61.65	62.22	60.74	61.77
	Medium	59.83	60.69	62.70	60.61
	Low	57.35	59.92	59.09	60.32
	Unweighted Means	59.61	60.94	60.84	60.90
POQ	High	30.02	28.33	27.21	26.05
	Medium	26.62	24.85	24.68	25.97
	Low	24.58	27.92	27.65	29.40
	Unweighted Means	27.07	27.03	26.51	27.14
IAR	High	18.91	18.39	18.92	17.18
	Medium	17.98	17.72	16.84	18.49
	Low	17.92	18.69	18.85	17.23
	Unweighted Means	18.27	18.26	18.20	17.63
Giving Help	High	1.98	1.84	1.90	2.09
	Medium	2.00	2.04	1.94	1.95
	Low	1.86	2.21	2.05	2.06
	Unweighted Means	1.95	2.03	1.96	2.03
Getting Help	High	2.07	1.95	1.93	2.11
	Medium	2.09	2.07	1.94	2.00
	Low	1.91	2.31	2.06	2.09
	Unweighted Means	2.02	2.11	1.98	2.06

Table VA-PS-A3

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and Staff Problem Solving

Year 1

Individual Level Analyses

Source	F^a	p
Grade	1.37	.232
Income (High X Medium + Low)	4.25	.001
(Medium X Low)	5.29	.001
Program	.74	.595
Grade X Program	1.85	.101
Income X Program		
(High X Medium + Low)	1.23	.294
(Medium X Low)	3.37	.005
Grade X Income X Program		
(High X Medium + Low)	1.92	.089
(Medium X Low)	2.73	.019

[a] Degrees of freedom = 5,688

Class Level Analyses

Source	F^a	p
Grade	.22	.948
Income (High X Medium + Low)	2.76	.047
(Medium X Low)	2.06	.114
Program	.13	.984
Grade X Program	.44	.817
Income X Program		
(High X Medium + Low)	.42	.833
(Medium X Low)	.93	.486
Grade X Income X Program		
(High X Medium + Low)	.54	.745
(Medium X Low)	1.02	.432

[a] Degrees of freedom = 5,20

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Table VA-PS-A4

ANOVA for Student Affective/Social Outcomes for Three-Way Interaction of Grade by Income by Staff Problem Solving
Year 1

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
SOCL	NOT SIGNIFICANT		.10	.753
POO			2.91	.089
IAR			7.96	.005
Giving Help			1.03	.314
Getting Help			3.82	.051

[a] Degrees of freedom = 1,692

Table VA-PS-A5

ANOVA for Student Affective/Social Outcomes for Two-Way Interaction of Income by Staff Problem Solving
Year 1

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
SOCL	NOT SIGNIFICANT		3.84	.051
POQ			3.23	.073
IAR			5.67	.018
Giving Help			0.89	.345
Getting Help			1.60	.206

[a] Degrees of freedom = 1,692

Table VA-PS-C6

ANOVA for Student Affective/Social Outcomes for Main Effects of Income
Year 1

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	6.85	.009	4.76	.030
POQ	13.71	.001	11.67	.001
IAR	4.82	.029	.07	.795
Giving Help	.31	.576	1.24	.266
Getting Help	.06	.812	1.75	.186

[a] Degrees of freedom = 1,692

(3) Summary for Staff Problem Solving

On cognitive data, students in Low Income schools do better in High Staff Problem Solving schools (those in which faculty report unconstrained participation; effective, involved problem solving; and organized, relevant, and decisive work). For other income levels and for affective/social outcomes, no clear statement can be made. Since Low Income students benefit on cognitive outcomes, there is some encouragement for having High Staff Problem Solving.

g. Summary for Year 1

To provide a summary statement, these steps were taken:

(1) The MANOVA and ANOVA results were reviewed.

(2) The results of the main effects of the program variables were studied.

(3) The means tables were studied to determine whether the "high" or "low" program appeared to be higher by grade and income set.

The following summarizes Year 1 results for Question 3. Student cognitive outcomes were generally higher in schools in which staff members considered SWF Goals important and in schools in which teachers were engaged in SWF teacher behavior. Student affective/social outcomes were generally higher in schools in which SWF Goals were important.

B. Year 2

1. Objectives

The intent for this question in the second year was the same as in the first: determine whether SWF school organization characteristics influence student outcomes.

2. Design

In the second year, data on student outcomes were collected pre and post so that the measures used in the analyses were indications of change (as contrasted with indications of post test state, which was used in the first year). Said differently, outcome or criterion data were residual gain scores based on regression procedures.

The analyses were multivariate analysis of variance utilizing the same three-factor design. Factors were grade, income, and program characteristics. Several organizational variables were tested, and they will be reported in the next section on measurement.

3. Measurement

The measures of organizational variables were obtained from responses of instructional staff in each school to questionnaires. The variables measured were SWF Goals, SWF Teacher Role Behavior, Rewards for SWF Teacher Role Behavior, Principal Role, and Staff Problem Solving.

This year, the total score for SWF Goals was found to differentiate schools, and it was used. (In Year 1, that differentiation was not found. SWF Goals for Students, a part of the total, was used.) Otherwise, the variable measures were the same in Year 2 as in Year 1.

4. Sample

All instructional staff in the schools involved were invited to respond to the questionnaire. Because of varying utilization of special staff members for such activities as music, art, physical education, and Title I services (such as reading, mathematics, and language development), the definition of instructional staff membership varied some from school to school. However, based on the definition of that group by the principal and on school district data, it is possible to estimate the proportion of people in each school who didn't respond of the total who were eligible. In one school, only 63 percent of the instructional staff responded. In all other schools, the proportion was in excess of 80 percent. In several schools, all those eligible did respond. Approximately 260 staff members provided data.

5. Data Collection

Research staff members met with the instructional staff of each school participating in the project to explain the data collection. The purposes were reviewed (they had been explained when the school was invited to participate). School staff members were given copies of the questionnaire and a consent form. The consent form explained that no one could be required to respond and asked for a signature indicating understanding of the voluntariness of their responses. School staff members took the questionnaires with them. Research staff returned to the schools to collect the questionnaires several days later. Consent forms were collected separately from questionnaires. School staff members were paid for their time in completing the questionnaires. No problems arose in this process.

6. Results

The impact of organizational variables on student outcomes will be reported in this section. The organizational variables measured were SWF Goals, SWF Teacher Role Behavior, Rewards for SWF Teacher Role Behavior, Principal Role Behavior, and Staff Problem Solving.

Each will be considered in turn, with cognitive outcome analyses reported first, then affective/social. Both individual level analyses and class level analyses are included.

a. Impact of SWF Goals

Staff members of the schools involved in the study were asked to respond to a series of questions about the importance to the staff in their school of a variety of goals. These goals concerned four areas: goals for students, goals for teachers, goals for school staff, and goals for relationships with parents. Scores were computed for each respondent based on the importance the respondent stated the item had for the staff and on the importance attributed to that item by staff members of the Educator Training Center. (For more discussion of the measures, see section V.A.3.)

Mean scores for each school for each goal area were computed. Although there had been significant differences among schools on Goals for Students in the first year, there was not a significant difference for all Goals combined. There were significant differences among schools on the total score for all goal areas combined for Year 2. Therefore, that measure was used in this analysis.

(1) Data on Cognitive Outcomes

Table VB-G-1 shows the distribution of students and classes for these data. Two of the cells in the table contain data from only one class. In Grade 5 High Income High SWF Goals, the class had high scores on both pre and posttests on the ITBS measures and on Unlikely Things. The pretest scores on the TTCT measures were below the grade average, however, which seems odd in terms of the rest of the performance of the class. There is no evidence of bias in selection or data collection for this class.

The other cell with a single class is in Grade 6 High Income High SWF Goals. This class was high on both pretest and posttest scores. There is no evidence of bias in data collection. This class is one which was added to the set of classes on the basis of principal's recommendation and was not included in the analysis of Question 1.

Mean scores on student cognitive outcomes, based on individual level analyses, are provided in Table VB-G-C1. These means are based on residuals, the difference between the predicted score and actual score for each student in the cell. In general, a negative score means that the students, on the average, had lower scores than predicted. Positive scores mean that the posttest score was higher than predicted. For a more complete description of the residuals, see section III.B.3.

MANOVA results for both individual and class level analyses are in Table VB-G-C2. At the individual level, all analyses except the Income by Program interactions reached significance. At the class level, significance was reached for the main effects of Grade and Income and the Grade by Income by SWF Goals interaction. It is interesting to note that, at the class level of analysis, SWF Goals almost reached significance. This analysis suggests higher scores for students in schools which are high on SWF Goals in Math Problem Solving, Fluency, and Originality.

The remainder of the discussion will be based on individual level analyses.

The three-way interactions of Grade, Income, and SWF Goals are significant for both Income contrasts. The univariate data are in Table VB-G-C3. The data in that table indicate that the interaction involving the High by Medium plus Low Income contrast significantly affects Math Problem Solving and Fluency. References is very nearly significant. Examination of the means in Table VB-G-C1 suggests that Grade 5 High Income school students score higher in High SWF Goals schools. In Grade 6, there appears to be essentially no difference between High and Low SWF Goals for High Income students. In both grades, with Medium and Low Income groups combined, the differences between student outcomes in High and Low SWF Goals schools is smaller or, essentially, non-existent. Thus, the main result of the first three-way interaction is that Grade 5 High Income school students do better in High SWF Goals schools.

Turning to the Medium by Low Income contrasts for the three-way interaction, Table VB-G-C3 indicates that the effects are significant for References and Math Problem Solving. The means indicate that the effects differ for the two variables, the two grade levels and the two income levels such that no simple summary is possible. Two consistencies appear: Grade 5 Middle Income school students and Grade 6 Low Income school students appear to score higher in Low SWF Goals schools.

Neither of the Income contrasts is significant for the Income by Program interaction, as shown in Table VB-G-C2.

The interaction of Grade by SWF Goals is signficant. The univariate data are in Table VB-G-C4. They show the effect to be significant for the TTCT outcomes. The means indicate that students in Grade 5 in High SWF Goals schools have higher residual scores than students in Low SWF Goals schools across income levels. There is no such consistency in Grade 6.

There is a significant main effect for SWF Goals. The univariate data in Table VB-G-C indicate the effects impact on Math Problem Solving and the TTCT outcomes. Examination of the means, however, indicates that the effect is clear in Grade 5 and not Grade 6, thus the Grade by SWF Goals interaction, discussed in the paragraph above, is a more accurate explanation.

A significant main effect for Income is shown in Table VB-G-C2 for both Income contrasts. First, consider the effects shown in Table VB-G-C6. All outcomes are affected. High Income school students score highest. The Medium by Low Income contrast shows significant effects on all outcomes except Math Problem Solving and Unlikely Things. Medium Income school students have higher outcome scores.

The main effect for Grade is also significant. Table VB-G-C7 shows it to be significant for References, Originality and Unlikely Things. An unweighted combination of the means in Table VB-G-C1 for the affected outcomes indicates that Grade 6 students score higher on References and Unlikely Things, while Grade 5 students score higher on Originality. These results appear to have no significant involvement in the analyses involving SWF Goals.

To summarize the cognitive outcomes, students in Grade 5 generally have higher outcomes in SWF schools with High Income school students apparently more strongly affected. Students in Grade 6 present a mixed set of results.

Table VB-G-1

Distribution of Students and Classes for Cognitive and Affective/Social Outcomes by Grade, Income, and SWF Goals
Year 2

Individual Level Analyses

Income	Grade 5		Grade 6	
	SWF Goals		SWF Goals	
	High	Low	High	Low
High	28	87	26	70
Medium	144	45	137	71
Low	62	66	74	36

Class Level Analyses

Income	Grade 5		Grade 6	
	SWF Goals		SWF Goals	
	High	Low	High	Low
High	1	4	1	3
Medium	5	2	6	3
Low	3	3	4	2

Table VB-G-C1

Student Cognitive Outcome Mean Scores by Grade, Income, and SWF Goals

Year 2

Cognitive Outcomes	Income	Means			
		Grade 5		Grade 6	
		SWF Goals		SWF Goals	
		High	Low	High	Low
References (ITBS)	High	.231	.143	.129	.296
	Medium	-.137	.050	.071	-.049
	Low	-.146	-.159	-.159	-.014
	Unweighted Mean	-.017	.114	.014	.078
Math Problem Solving (ITBS)	High	.223	.056	.127	.127
	Medium	-.087	-.000	.138	-.436
	Low	.177	-.058	-.136	.108
	Unweighted Mean	.104	-.001	.043	-.067
Fluency (TTCT)	High	.730	-.215	.031	-.010
	Medium	.246	.019	.033	-.097
	Low	.027	-.436	-.108	-.037
	Unweighted Mean	.337	-.210	-.015	-.048
Flexibility (TTCT)	High	.454	-.185	.340	.150
	Medium	.133	.009	.048	.058
	Low	-.030	-.486	-.173	.019
	Unweighted Mean	.186	-.220	.072	.076
Originality (TTCT)	High	.785	-.186	-.032	-.045
	Medium	.304	.000	-.051	-.103
	Low	-.156	-.438	-.113	-.102
	Unweighted Mean	.311	-.208	-.066	-.083
Unlikely Things	High	-.121	.123	.268	.203
	Medium	-.034	-.080	.076	-.132
	Low	-.252	-.187	.067	.050
	Unweighted Mean	-.135	-.048	.137	.040

Table VB-G-C2

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and SWF Goals

Year 2

Individual Level Analyses

Source	F[a]	p
Grade	6.62	.001
Income (High X Medium + Low)	8.78	.001
(Medium X Low)	4.22	.001
Program	7.74	.001
Grade X Program	4.39	.001
Income X Program		
(High X Medium + Low)	1.31	.248
(Medium X Low)	1.73	.111
Grade X Income X Program		
(High X Medium + Low)	2.13	.048
(Medium X Low)	5.93	.001

[a] Degrees of freedom = 6,817

Class Level Analyses

Source	F[a]	p
Grade	4.42	.005
Income (High X Medium + Low)	3.69	.013
(Medium X Low)	2.08	.102
Program	2.36	.070
Grade X Program	1.40	.262
Income X Program		
(High X Medium + Low)	.73	.631
(Medium X Low)	1.16	.366
Grade X Income X Program		
(High X Medium + Low)	.87	.535
(Medium X Low)	3.51	.016

[a] Degrees of freedom = 6,20

Table VB-G-C3

ANOVA for Student Cognitive Outcomes for Three-Way Interaction of Grade by Income by SWF Goals
Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
References	3.61	.058	4.72	.030
Math Problem Solving	4.27	.039	31.83	.001
Fluency	3.99	.046	1.47	.225
Flexibility	.15	.699	1.64	.201
Originality	2.29	.131	.63	.429
Unlikely Things	.37	.546	.05	.816

[a] Degrees of freedom = 1,822

Table VB-G-C4

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Grade and SWF Goals
Year 2

Cognitive Outcomes	F[a]	p
References	.45	.560
Math Problem Solving	2.44	.118
Fluency	16.43	.001
Flexibility	12.55	.001
Originality	20.61	.001
Unlikely Things	1.30	.255

[a] Degrees of freedom = 1,822

Table VB-G-C5

ANOVA for Student Cognitive Outcomes for Main Effects of SWF Goals
Year 1

Cognitive Outcomes	F[a]	p
References	.67	.414
Math Problem Solving	12.75	.001
Fluency	28.43	.001
Flexibility	9.51	.002
Originality	26.42	.001
Unlikely Things	.57	.452

[a] Degrees of freedom = 1,822

Table VB-G-C6

ANOVA for Student Cognitive Outcomes for Main Effects of Income
Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
References	30.88	.001	5.24	.022
Math Problem Solving	17.95	.001	3.07	.080
Fluency	4.98	.026	11.79	.001
Flexibility	8.35	.004	13.75	.001
Originality	4.04	.045	6.73	.010
Unlikely Things	8.50	.004	.62	.433

[a] Degrees of freedom = 1,822

Table VB-G-C7

ANOVA for Student Cognitive Outcomes for Main Effects of Grade
Year 2

Cognitive Outcomes	F[a]	p
References	5.32	.021
Math Problem Solving	.28	.596
Fluency	1.84	.175
Flexibility	1.91	.167
Originality	7.79	.005
Unlikely Things	6.05	.014

[a] Degrees of freedom = 1,822

(2) Data on Affective/Social Outcomes

There are two cells in the three-factor design which have students from a single class. In Grade 5 in High Income in High SWF Goals the class varied in its position from outcome to outcome but tended to have approximately the same position on posttest as on pretest. There was nothing in the selection or data collection to indicate bias. The other single class cell was in Grade 6 in High Income in High SWF Goals. This class tended to have the same relative position on pre and post for the affective measures. It tended to be in a higher relative position on the posttest on the social outcomes than it was on the pretest. There was no evidence of bias in data collection.

The mean scores, based on individual level analyses, are in Table VB-G-A1.

Results of the MANOVA for both individual and class level analyses are in Table VB-G-A2. While most of the analyses are significant at the individual level, only Income main effects are significant in the class level analyses. The means for the two sets of analyses are quite similar. The differences must arise from the different number of units and from differences in variance resulting from the use of mean of means in the class level analyses.

The remainder of the discussion will be based on individual level analyses.

There is a significant three-way interaction of Grade, Income, and SWF Goals. Looking first at the interaction involving the contrast of High with Medium plus Low, the univariate results are in Table VB-G-A3. The effects are significant for the IAR and for Giving Help. Considering the IAR first, the means suggest that High SWF Goals schools have consistently beneficial effects for Grade 5 students. In Grade 6, students seem to do better on the IAR if they are in High Income schools and in High SWF Goals schools; while (when combined) Medium and Low Income school students may be better off in Low SWF Goals schools.

Turning to that same interaction for Giving Help, the results are reversed for the two grade levels and the two Income levels (considering Medium and Low combined).

The three-way interaction utilizing the Medium by Low Income contrast is also significant. The results of the ANOVA are also in Table VB-G-A3. The interaction has a significant effect on the POQ and Getting Help. On both outcomes, the results are almost completely opposite for the two grade levels and the two income levels.

Thus, the three-way interactions suggest that the factors do not have consistent effects.

Table VB-G-A2 shows a significant interaction of Income by SWF Goals for the High by Medium plus Low Income contrast. The ANOVA data for outcome variables are in Table VB-G-A4. The effect is significant for the IAR. Examination of the means indicates that High Income High SWF Goals students are most benefitted; there is probably no difference for Medium and Low Income school students (when combined) between High and Low SWF Goals schools.

There is a significant Grade by SWF Goals interaction; the ANOVA data are in Table VB-G-A5. A significant effect is found for POQ and IAR. The means indicate a relatively consistent positive effect of the High SWF Goals for Grade 5 students, while the picture for Grade 6 students is quite mixed.

SWF goals are reported in Table VB-G-A2 to have a significant main effect. Table VB-G-A6 reports the effects are significant for POQ and IAR. Examination of the means suggests a slight preponderance of High SWF Goals categories to appear to have the higher mean. However, the strongest regularity is among Grade 5 Medium Income High SWF Goals school students, who appear to be higher than their Low SWF Goals school counterparts on all outcomes.

Table VB-G-A2 indicates a significant main effect for Income for both contrasts. SOCL and Getting Help are significantly affected, as shown in Table VB-G-A7. By comparing means vertically within a grade and outcome variable, one can find that High Income school students, overall, tend to score higher than students in Medium and Low Income schools. Medium Income school students tend to have higher outcome scores than students in Low Income schools, as indicated by the Medium by Low Income contrast.

Summarizing the results for the affective/social outcome analysis, the IAR outcomes seem to be most affected and to indicate that the students in High SWF Goals schools benefit. Medium Income school Grade 5 students also seem to benefit from being in High SWF Goals schools. However, the general picture suggests considerable variation from grade to grade and income level to income level when looking at the impact of SWF Goals.

(3) Summary for SWF Goals

The general picture of results of the analyses of the effects of SWF Goals suggests a mixed set of effects of the importance given to these goals by school staffs. In general, benefits seem to accrue for students in schools in which staff attribute more importance to goals important to the SWF program, especially in Grade 5.

On cognitive outcomes, Grade 5 students in High SWF Goals schools generally have higher outcomes. Results for students in Grade 6 are very mixed.

For affective/social outcomes, the results are even more mixed. Grade 5 Medium Income school students appear to have higher outcomes in High SWF Goals schools. The means and the pattern of significant findings, including the main effect for SWF Goals indicate that students tend to be better off in High SWF Goals schools.

Table VB-G-A1 .

Student Affective/Social Outcome Mean Scores by Grade, Income, and SWF Goals
Year 2

Affective/ Social	Income	Means			
		Grade 5		Grade 6	
		SWF Goals		SWF Goals	
		High	Low	High	Low
SOCL	High	.074	.051	.029	.118
	Medium	.006	-.118	.157	.131
	Low	-.359	-.056	-.118	-.206
	Unweighted Means	-.093	-.041	.023	.015
POQ	High	.460	-.173	.207	.165
	Medium	.154	-.176	-.170	-.099
	Low	-.012	-.007	.065	-.063
	Unweighted Means	.200	-.119	.034	.001
IAR	High	.525	-.237	.292	.186
	Medium	.004	-.119	.085	-.196
	Low	-.049	-.119	-.016	.129
	Unweighted Means	.160	-.158	.120	.040
Giving Help	High	-.258	.141	.151	.029
	Medium	.075	-.031	-.041	-.081
	Low	-.086	-.088	-.068	.200
	Unweighted Means	-.089	.066	.014	.049
Getting Help	High	-.131	-.019	.338	-.026
	Medium	.147	.084	-.066	.131
	Low	-.258	-.156	.026	-.065
	Unweighted Means	-.081	.031	.099	.013

Table VB-G-A2

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and SWF Goals
Year 2

Source	F[a]	p
Grade	1.91	.091
Income (High X Medium + Low)	2.36	.038
(Medium X Low)	4.35	.001
Program	3.23	.007
Grade X Program	2.57	.026
Income X Program		
(High X Medium + Low)	2.28	.045
(Medium X Low)	1.81	.108
Grade X Income X Program		
(High X Medium + Low)	2.50	.029
(Medium X Low)	3.28	.006

[a] Degrees of freedom = 5,818

Source	F[a]	p
Grade	1.23	.329
Income (High X Medium + Low)	2.55	.059
(Medium X Low)	3.19	.027
Program	.90	.498
Grade X Program	.56	.726
Income X Program		
(High X Medium + Low)	1.38	.270
(Medium X Low)	1.23	.332
Grade X Income X Program		
(High X Medium + Low)	1.32	.293
(Medium X Low)	1.30	.303

[a] Degrees of freedom = 5,21

Table VB-G-A3

ANOVA for Student Affective/Social Outcomes for Three-Way Interaction of Grade, Income, and SWF Goals
Year 2

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	.28	.599	1.78	.181
POQ	2.42	.120	5.20	.023
IAR	4.85	.028	1.42	.234
Giving Help	5.40	.020	.05	.825
Getting Help	2.00	.157	5.86	.016

[a] Degrees of freedom = 5,818

Table VB-G-A4

ANOVA for Student Affective/Social Outcomes for Two-Way Interaction of Income and SWF Goals
Year 1

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	.00	.999		
POQ	2.86	.091		
IAR	4.95	.026	NOT SIGNIFICANT	
Giving Help	1.50	.221		
Getting Help	.84	.359		

[a] Degrees of freedom = 5,818

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Table VB-G-A5

ANOVA for Student Affective/Social Outcomes for Two-Way Interaction of Grade and SWF Goals
Year 2

Affective/Social Outcomes	F^a	p
SOCL	.93	.335
POQ	8.98	.003
IAR	2.60	.007
Giving Help	.00	.980
Getting Help	.02	.882

[a] Degrees of freedom = 5,818

Table VB-G-A6

ANOVA for Student Affective/Social Outcomes for Main Effects of SWF Goals
Year 2

Affective/Social Outcomes	F^a	p
SOCL	.19	.660
POQ	6.82	.009
IAR	10.34	.001
Giving Help	.25	.614
Getting Help	.00	.985

[a] Degrees of freedom = 5,818

Table VB-G-A7

ANOVA for Student Affective/Social Outcomes for Main Effects of Income
Year 1

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	2.49	.115	13.84	.001
POQ	5.60	.018	.79	.375
IAR	6.19	.013	.10	.757
Giving Help	1.08	.298	.46	.499
Getting Help	.14	.713	6.57	.011

[a] Degrees of freedom = 5,818

b. Impact of SWF Teacher Role Behavior

The same measure was used in the second year of data collection as was used the first year. Staff members were asked to report the extent to which teachers engaged in a set of behaviors which were identified as important to the SWF program. Scores were computed for each respondent on the set of items, and a mean for each school was computed. (For further description of the measures, see section V.A.3.) An analysis of variance was conducted on those data, and significant differences among schools were found. Schools were divided into two groups as near the middle as a reasonable division of scores permitted. The two groups were tested for significance of difference and were found to be different. Students were then assigned to the three-factor design cells, and the multivariate analysis of variance conducted.

(1) Data for Cognitive Outcomes

The distribution of students and classes for SWF Teacher Role Behavior is shown in Table VB-T-1. The Grade 6 Low Income Low SWF Teacher Role Behavior cell has only one class. There does not appear to be anything remarkable in the pre and posttest scores for that class. There is no evidence of bias in selection or in data collection.

The mean residual scores, based on individual level analyses, are in Table VB-T-C1.

The MANOVA results for both individual and class level analyses are in Table VB-T-C2. All the analyses at the individual level are significant except one of the Income by SWF Teacher Role Behavior interactions. Only the main effects of Grade and of Income (the High by Medium plus Low Income contrast) are significant at the class level of analyses. However, SWF Teacher Role Behavior approaches significance, having a p value of .083. The means appear to be higher for students in schools high on SWF Teacher Role Behavior.

The remainder of the discussion will be based on the individual level analyses.

Significant three-way interactions are shown for Grade by Income (both contrasts) by SWF Teacher Role Behavior. Univariate data are provided in Table VA-T-C3. For the High by Medium plus Low Income contrast, the effects are significant for Reference, Math Problem Solving, and Originality. Significance is approached for Fluency and Flexibility. Examination of the means data indicate that, in Grade 5, students in High SWF Teacher Role Behavior schools are more likely to have higher residuals (more likely to score higher on the posttest than predicted) than students in Low SWF Teacher Role Behavior schools, for High Income schools and for Medium and Low Income schools combined. In Grade 6, however, students in High Income schools tend to score higher in Low SWF Teacher Role Behavior schools, while Medium and Low Income school students do better in High

SWF Teacher Role Behavior schools. Said differently, students in Medium and Low Income schools generally score higher on outcome measures in High SWF Teacher Role Behavior schools. High Income school students split by grade: In Grade 5, they do better if the school is High; in Grade 6, they do better if the school is Low in SWF Teacher Role Behavior.

The Medium by Low Income contrast identifies a significant effect on Math Problem Solving. The means indicate that the two Income levels have opposite results from each other within grade and between grades. While that result is striking, it does not indicate the pattern of findings which is reflected in the paragraphs above.

Table VB-T-C2 shows a significant Income by SWF Teacher Role Behavior interaction for the Medium by Low Income contrast. The effects are significant for Math Problem Solving and for Flexibility. (See Table VA-T-C4.) Those effects are in opposite directions on the two outcomes. That is, on Math Problem Solving, students in Medium Income schools do better if the school is High on SWF Teacher Role Behavior; on Flexibility, students in Medium Income schools do better if the school is Low. The reverse of these findings is true for students in Low Income schools. This interaction reflects the mixed effects of the Program upon different income and grade groups.

Table VB-T-C2 indicates a significant Grade by SWF Teacher Role Behavior interaction. The univariate results are in Table VB-T-C5. Those data indicate significant effects on the TTCT measures. Examination of the means shows that in Grade 5, students in High SWF Teacher Role Behavior schools in all income categories tend to score higher than students in Low SWF Teacher Role Behavior schools. Students in Grade 6 in Low Income schools have similar results. However, students in High Income schools in Grade 6 tend to have higher outcome scores in Low SWF Teacher Role Behavior schools. Medium Income school students have more mixed results. Thus, it appears that the students are better off in High SWF Teacher Role Behavior schools in Grade 5 but have mixed results in Grade 6 as far as the TTCT is concerned.

The significant main effect for SWF Teacher Role Behavior, reported in Table VB-T-C2, seems justified in Grade 5 and for Low Income school students in both grades. The univariate data are in Table VB-T-C6. The effect is significant and positive for Math Problem Solving and the TTCT.

The significant main effects for Income and Grade reflect those discussed above under Goals.

To sum up the results for the cognitive data, students in Medium and Low Income schools tend to do better in schools in which teachers engage in important SWF behaviors to a greater extent. Students in High Income schools in Grade 5 seem to do better in schools High on SWF Teacher Role Behavior and less well in such schools in Grade 6.

Table VB-T-1

Distribution of Students for Cognitive and Affective/Social Outcomes by Grade, Income, and Teacher SWF Role Behavior

Year 2

Individual Level Analyses

Income	Grade 5 Teacher Role Behavior High	Grade 5 Teacher Role Behavior Low	Grade 6 Teacher Role Behavior High	Grade 6 Teacher Role Behavior Low
High	73	42	46	50
Medium	144	45	113	95
Low	62	66	88	22

Class Level Analyses

Income	Grade 5 Teacher Role Behavior High	Grade 5 Teacher Role Behavior Low	Grade 6 Teacher Role Behavior High	Grade 6 Teacher Role Behavior Low
High	3	2	2	2
Medium	5	2	5	4
Low	3	3	5	1

Table VB-TC1

Student Cognitive Outcome Mean Scores by Grade, Income, and SWF Teacher Role Behavior Year 2

Cognitive Outcomes	Income	Means Grade 5 Teach Role Behav High	Means Grade 5 Teach Role Behav Low	Means Grade 6 Teach Role Behav High	Means Grade 6 Teach Role Behav Low
References (ITBS)	High	.192	.116	.071	.416
	Medium	-.137	.050	.072	-.020
	Low	-.146	-.159	-.113	-.109
	Unweighted Mean	-.030	.003	.010	.096
Math Problem Solving (ITBS)	High	.188	-.062	.037	.209
	Medium	-.087	-.000	.173	-.332
	Low	.177	-.058	-.130	.233
	Unweighted Mean	.093	-.040	.027	.039
Fluency (TTCT)	High	.292	-.466	-.088	.082
	Medium	.246	.019	-.008	-.015
	Low	.037	-.436	-.059	-.186
	Unweighted Mean	.192	-.294	-.052	-.040
Flexibility (TTCT)	High	.217	-.457	.112	.284
	Medium	.133	.009	-.036	.154
	Low	-.030	-.486	-.077	-.243
	Unweighted Mean	.106	-.311	.000	.065
Originality (TTCT)	High	.361	-.489	-.220	.122
	Medium	.304	.000	-.087	-.048
	Low	.156	-.438	-.064	-.293
	Unweighted Mean	.274	-.309	-.123	-.073
Unlikely Things	High	.067	.057	.272	.173
	Medium	-.034	-.080	.045	-.043
	Low	-.252	-.187	.076	.005
	Unweighted Mean	-.073	-.070	.131	.045

Table VB-T-C2

Multivariate ANOVA of Student Cognitive Outcomes by Grade,
Income, and SWF Teacher Role Behavior
Year 2
Individual Level Analyses

Source	F[a]	p
Grade	6.17	.001
Income (High X Medium + Low)	8.55	.001
(Medium X Low)	4.60	.001
Program	6.25	.001
Grade X Program	5.39	.001
Income X Program		
(High X Medium + Low)	.78	.583
(Medium X Low)	2.16	.045
Grade X Income X Program		
(High X Medium + Low)	4.05	.001
(Medium X Low)	6.01	.001

[a] Degrees of freedom = 6,817

Class Level Analyses

Source	F[a]	p
Grade	4.64	.004
Income (High X Medium + Low)	3.16	.024
(Medium X Low)	2.07	.103
Program	2.22	.083
Grade X Program	1.53	.220
Income X Program		
(High X Medium + Low)	.52	.788
(Medium X Low)	1.28	.312
Grade X Income X Program		
(High X Medium + Low)	.97	.468
(Medium X Low)	3.02	.029

[a] Degrees of freedom = 6,20

Table VB-T-C3

ANOVA for Student Cognitive Outcomes for Three-Way Interaction of Grade, Income, and SWF Teacher Role Behavior
Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
References	10.31	.001	2.33	.128
Math Problem Solving	9.14	.003	34.11	.001
Fluency	6.98	.009	.02	.891
Flexibility	2.70	.101	.24	.622
Originality	8.98	.003	.18	.671
Unlikely Things	.01	.927	.59	.443

[a] Degrees of freedom = 1,822

Table VB-T-C4

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income and SWF Teacher Role Behavior
Year 1

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
References	NOT SIGNIFICANT		.02	.890
Math Problem Solving			7.50	.006
Fluency			1.30	.244
Flexibility			3.85	.050
Originality			2.48	.116
Unlikely Things			.10	.754

[a] Degrees of freedom = 1,822

Table VB-T-C5

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Grade and SWF Teacher Role Behavior

Year 2

Cognitive Outcomes	F[a]	p
References	.09	.770
Math Problem Solving	.31	.578
Fluency	20.59	.001
Flexibility	19.72	.001
Originality	28.49	.001
Unlikely Things	.42	.516

[a] Degrees of freedom = 1,822

Table VB-T-C6

ANOVA for Student Cognitive Outcomes for Main Effects of SWF Teacher Role Behavior

Year 2

Cognitive Outcomes	F[a]	p
References	1.27	.259
Math Problem Solving	8.79	.003
Fluency	22.31	.001
Flexibility	6.70	.010
Originality	21.24	.001
Unlikely Things	1.14	.285

[a] Degrees of freedom = 1,822

(2) Data for Affective/Social Outcomes

In the section on cognitive outcomes, it was noted that the Grade 6, Low Income, Low SWF Teacher Role Behavior cell had a single class in it. There does not appear to be anything in the pre and posttest scores to suggest the data are exceptional or distorted on affective/social measures. (The same table provides the distribution of students and classes, Table VB-T-1.)

Mean scores are in Table VB-T-A1, based on individual level analyses.

The results of the MANOVA for both individual and class levels of analyses are in Table VB-T-A2. The only significant results in the class level analyses are in Income main effects. Students in High Income schools tend to have higher scores on the SOCL, and students in Medium Income schools do have higher scores on the SOCL than students in Low Income schools. Those results are similar to those at the individual level of analyses.

The remainder of the discussion will be based on individual level analyses.

The three-way interaction of Grade, Income, and SWF Teacher Role Behavior is significant for the Medium by Low Income contrast. The univariate data for that interaction are in Table VB-T-A3, and show that Getting Help is significantly affected. The POQ nearly reaches significance. Examination of the means shows that Grade 5 Medium Income school students are more likely to have higher scores if they are in High SWF Teacher Role Behavior schools, while the opposite is true for Grade 6 Low Income school students. Students in Grade 6 display an opposite pattern at both income levels.

However, when one examines the pattern of mean scores, noting which appears highest in each comparison between High and Low SWF Teacher Role Behavior conditions (in each Grade and Income set), little consistency can be determined.

Further examination of the means shows that in Grade 5 High Income schools the students in Low SWF Teacher Role Behavior schools appear to have higher outcomes on four of the five measures. In Grade 5 Medium Income schools, the students in High SWF Teacher Role Behavior schools have apparently higher outcomes on all five measures. In Grade 6, no such patterns appear.

No other interactions reach significance.

The main effect of SWF Teacher Role Behavior deserves attention. It has a significant effect on the IAR, where five of the six possible comparisons of means (between High and Low SWF Teacher Role

Behavior, within Grade and Income) seem to favor High SWF Teacher Role Behavior. However, significance is nearly reached (see Table VB-T-A4) for the SOCL. On this measure, four of the six possible comparisons seem to favor Low SWF Teacher Role Behavior.

Income main effects are in Table VB-T-A5. Students in Medium Income schools do better on the SOCL and Getting Help than students in Low Income schools.

To sum up the results of the analysis of affective/social outcomes, no consistent pattern appears which could provide direction to persons interested in implementing the SWF program.

(3) Summary for SWF Teacher Role Behavior

The analyses indicate mixed results; there is some evidence in the cognitive data that students are likely to be better off in schools in which the staff describe teachers as frequently engaging in the activities identified as important to the SWF program.

Students in Medium and Low Income schools do better on cognitive outcomes in schools in which teachers are reported to engage in SWF Teacher Role Behaviors to a greater extent than do students in those income levels in schools in which teachers do those things to a lesser extent. Students in High Income schools in Grade 5 seem to do better in schools High on SWF Teacher Role Behavior and less well in such schools in Grade 6.

On the affective/social outcomes, the pattern of results was so mixed by Grade, Income, and student outcome as to preclude evidence that the extent to which teachers engaged in the appropriate behaviors made a consistent difference.

Table VB-T-A1

Student Affective/Social Outcome Mean Scores by Grade, Income, and SWF Teacher Role Behavior

Year 2

Affective/ Social	Income	Means: Grade 5, Teacher Role Behavior: High	Means: Grade 5, Teacher Role Behavior: Low	Means: Grade 6, Teacher Role Behavior: High	Means: Grade 6, Teacher Role Behavior: Low
SOCL	High	-.009	.171	.029	.154
	Medium	.006	-.118	.152	.144
	Low	-.359	-.056	-.208	.100
	Unweighted Means	-.120	-.001	-.009	.133
POQ	High	-.033	.005	.131	.218
	Medium	.154	-.176	-.161	-.128
	Low	-.012	-.007	.036	-.028
	Unweighted Means	.036	-.059	.002	.021
IAR	High	.069	-.260	.269	.165
	Medium	.004	-.119	.109	-.155
	Low	-.049	-.119	.009	.120
	Unweighted Means	.008	-.166	.129	.043
Giving Help	High	-.107	.306	.151	-.021
	Medium	.075	-.031	-.045	-.066
	Low	-.086	-.088	-.016	-.161
	Unweighted Means	-.039	.062	.030	.025
Getting Help	High	-.102	.050	.123	.026
	Medium	.147	.084	-.080	.098
	Low	-.258	-.156	.029	-.136
	Unweighted Means	-.071	-.008	.024	-.004

Table VB-T-A2

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income and SWF Teacher Role Behavior
Year 2

Individual Level Analyses

Source	F[a]	p
Grade	1.92	.089
Income (High X Medium + Low)	1.46	.199
(Medium X Low)	4.20	.001
Program	2.34	.041
Grade X Program	.57	.723
Income X Program		
(High X Medium + Low)	1.02	.403
(Medium X Low)	2.11	.062
Grade X Income X Program		
(High X Medium + Low)	1.91	.091
(Medium X Low)	2.40	.036

[a] Degrees of freedom = 5,818

Class Level Analyses

Source	F[a]	p
Grade	1.27	.315
Income (High X Medium + Low)	2.64	.053
(Medium X Low)	3.22	.026
Program	.74	.605
Grade X Program	.20	.958
Income X Program		
(High X Medium + Low)	.67	.651
(Medium X Low)	1.73	.171
Grade X Income X Program		
(High X Medium + Low)	1.80	.156
(Medium X Low)	.81	.556

[a] Degrees of freedom = 5,21

Table VB-T-A3

ANOVA for Student Affective/Social Outcomes for Three-Way Interaction of Grade, Income, and SWF Teacher Role Behavior
Year 2

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL	NOT SIGNIFICANT		.06	.810
POQ			3.39	.066
IAR			.79	.375
Giving Help			.05	.820
Getting Help			6.17	.013

[a] Degrees of freedom = 1,822

Table VB-T-A4

ANOVA for Student Affective/Social Outcomes for Main Effects of SWF Teacher Role Behavior
Year 2

Affective/Social Outcomes	F[a]	p
SOCL	3.35	.068
POQ	.89	.345
IAR	6.76	.010
Giving Help	.02	.897
Getting Help	.08	.781

[a] Degrees of freedom = 1,822

Table VB-T-A5

ANOVA for Student Affective/Social Outcomes for Main Effects of Income Year 2

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
SOCL	NOT SIGNIFICANT		13.98	.001
POQ			.34	.561
IAR			.00	.970
Giving Help			.39	.534
Getting Help			6.65	.010

[a] Degrees of freedom = 1,822

c. Impact of Rewards for SWF Teacher Role Behavior

Staff members in the schools were asked to describe the frequency that teachers were praised or otherwise rewarded for engaging in activities which were important to the SWF program. A score was generated for each respondent. (For further explanation of this score, see section V.A.3. of this report.) A mean score was generated for each school. An ANOVA indicated that there was a significant difference among schools. The schools were divided into High and Low categories, splitting as near the middle as a reasonable difference in scores permitted. The difference between the means of the two new groups was found to be significant.

The distribution of students and classes is shown in Table VB-R-1. There are two cells with single classes.

(1) Data on Cognitive Outcomes

First, consideration will be given to the cells with single classes. In Grade 5 Medium Income Low Rewards, the class tends to have low pretest and posttest scores. There is no evidence that anything may have biased the residuals upon which the analysis is based The other single class cell was in Grade 6 Low Income Low Rewards. The class in that cell tended to have approximately the same relative position on pretest and posttest scores in its grade on cognitive outcomes. There was no evidence of bias in data collection.

The means based on individual level analyses are in Table VB-R-C1. The MANOVA results for both individual and class level analyses are in Table VB-R-C2. At the class level, there is a significant interaction of Grade and Rewards. There are also significant main effects for Grade and Income in those analyses. Those results are similar to the individual level analyses for those factors and interactions.

The remainder of the discussion will be based on individual level analyses.

There is a significant three-way interaction of Grade, Income (Medium by Low), and Rewards. The effects are significant for Math Problem Solving and Unlikely Things, with Originality reaching .052 and Fluency reaching .089 as shown in Table VB-R-C3. The results are different for the different outcome measures, with the only consistency appearing in Grade 6 where students in Medium Income schools appear to have higher outcome scores on the TTCT and Unlikely Things if in Low Rewards schools, while students in Low Income schools appear to have higher outcome scores in High Rewards schools. In Grade 5, in all income levels, students appear to generally have higher outcome scores if they are in High Rewards schools.

Table VB-R-C2 indicates that there is a significant interaction between Income (Medium by Low income contrast) and Rewards. The univariate results are in Table VB-R-C4. The effects are significant for Math Problem Solving and the TTCT measures. The main source of this interaction, as stated above, is in Grade 6. However, for Math Problem Solving, the results are in the opposite direction. Students in Grade 6 in Medium Income schools score higher if they are in High Rewards schools, while students in Low Income schools score higher if they are in Low Rewards schools.

There is a significant Grade by Rewards interaction. The univariate data are in Table VB-R-C5. The effects are significant for Math Problem Solving and the TTCT measures. As examination of the means in Table VB-R-C1 shows, the Grade 5 students in all income levels score higher on those measures when in High Rewards schools. Students in Grade 6 in Low Income schools appear to score higher on three of the four outcomes if they are in High Rewards schools. For High and Medium Income school students in Grade 6, the opposite is usually true: they score higher in Low Rewards schools.

A significant main effect is shown for Rewards in Table VB-R-C2. The univariate data are provided in Table VB-R-C6. The effects are significant for Fluency and Originality and very nearly for Flexibility. Examination of the means suggests that students in High Rewards schools probably do somewhat better, generally, on those cognitive outcomes. These results appear to be principally reflecting Grade 5 data.

The significant main effects for Income and Grade, shown in Table VB-R-C2 reflect those discussed above under Goals.

To sum up the cognitive data, students in Grade 5 do better in High Rewards schools. Students in Grade 6 in High and Medium Income schools do better in Low Rewards schools. Students in Grade 6 in Low Income schools do better in High rewards schools. The general impact of High Rewards is favorable.

Table VB-R-1

Distribution of Students and Classes for Cognitive and Affective/Social Outcomes by Grade, Income, and Rewards for SWF Teacher Role Behavior

Year 2

Individual Level Analyses

Income	Grade 5		Grade 6	
	Rewards		Rewards	
	High	Low	High	Low
High	73	42	46	50
Medium	168	21	140	68
Low	62	66	88	22

Class Level Analyses

Income	Grade 5		Grade 6	
	Rewards		Rewards	
	High	Low	High	Low
High	3	2	2	2
Medium	6	1	6	3
Low	3	3	5	1

Table VB-R-C1

Student Cognitive Outcome Mean Scores by Grade, Income, and Rewards for SWF Teacher Role Behavior Year 2

Cognitive Outcomes	Income	Means			
		Grade 5		Grade 6	
		Rewards		Rewards	
		High	Low	High	Low
References (ITBS)	High	.192	.116	.071	.416
	Medium	-.099	-.037	-.001	.094
	Low	-.146	-.159	-.113	-.109
	Unweighted Mean	-.018	-.026	-.014	.134
Math Problem Solving (ITBS)	High	.188	-.062	.037	.209
	Medium	.055	-.161	-.010	-.156
	Low	.177	-.058	-.130	.239
	Unweighted Mean	.104	-.094	-.034	.097
Fluency (TTCT)	High	.292	-.466	-.088	.082
	Medium	.222	-.046	-.143	.260
	Low	.037	-.436	-.059	-.186
	Unweighted Mean	.184	-.316	-.097	.052
Flexibility (TTCT)	High	.217	-.457	.112	.284
	Medium	.129	-.107	-.079	.319
	Low	-.030	-.486	-.077	-.243
	Unweighted Mean	.105	-.350	-.015	.120
Originality (TTCT)	High	.361	-.488	-.220	.122
	Medium	.279	-.147	-.221	.244
	Low	.156	-.438	-.064	-.293
	Unweighted Mean	.265	-.358	-.168	.024
Unlikely Things	High	.068	.057	.272	.173
	Medium	-.035	-.127	-.117	.256
	Low	-.252	-.187	.076	.005
	Unweighted Mean	-.073	-.086	.077	.144

Table VB-R-C2

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and Rewards for SWF Teacher Role Behavior

Year 2

Individual Level Analyses

Source	F[a]	p
Grade	6.18	.001
Income (High X Medium + Low)	7.97	.001
(Medium X Low)	4.55	.001
Program	2.59	.017
Grade X Program	11.07	.001
Income X Program		
(High X Medium + Low)	1.11	.357
(Medium X Low)	2.12	.049
Grade X Income X Program		
(High X Medium + Low)	1.71	.115
(Medium X Low)	3.55	.002

[a] Degrees of freedom = 6,817

Class Level Analyses

Source	F[a]	p
Grade	4.92	.003
Income (High X Medium + Low)	3.89	.010
(Medium X Low)	2.48	.059
Program	.89	.522
Grade X Program	2.91	.033
Income X Program		
(High X Medium + Low)	.83	.559
(Medium X Low)	.98	.465
Grade X Income X Program		
(High X Medium + Low)	.45	.838
(Medium X Low)	1.40	.264

[a] Degrees of freedom = 6,20

Table VB-R-C5

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Grade and Rewards for SWF Teacher Role Behavior
Year 2

Cognitive Outcomes	F^a	p
Reading		
References	1.85	.173
Math Problem Solving	6.47	.011
Fluency	48.44	.001
Flexibility	34.29	.001
Originality	59.15	.001
Unlikely Things	2.38	.123

[a] Degrees of freedom = 1,822

Table VB-R-C6

ANOVA for Student Cognitive Outcomes for Main Effects of Rewards for SWF Teacher Role Behavior
Year 2

Cognitive Outcomes	F^a	p
Reading		
References	3.05	.081
Math Problem Solving	1.44	.231
Fluency	7.41	.007
Flexibility	3.67	.056
Originality	8.14	.005
Unlikely Things	.66	.417

[a] Degrees of freedom = 1,822

Table VB-R-C3

ANOVA for Student Cognitive Outcomes for Three-Way Interaction of Grade, Income, and Rewards for SWF Teacher Role Behavior
Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
Reading	NOT SIGNIFICANT			
References			.02	.876
Math Problem Solving			10.95	.001
Fluency			2.90	.089
Flexibility			1.81	.179
Originality			3.78	.052
Unlikely Things			5.36	.021

[a] Degrees of freedom = 1,822

Table VB-R-C4

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income and Rewards for SWF Teacher Role Behavior
Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
Reading	NOT SIGNIFICANT			
References			.21	.648
Math Problem Solving			4.37	.037
Fluency			5.34	.021
Flexibility			4.25	.040
Originality			5.71	.017
Unlikely Things			1.32	.251

[a] Degrees of freedom = 1,822

Table VB-R-C7

ANOVA for Student Cognitive Outcomes for Main Effects of Income
Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
Reading				
References	34.15	.001	5.86	.016
Math Problem Solving	10.97	.001	2.10	.147
Fluency	.51	.477	13.91	.001
Flexibility	4.49	.034	14.84	.001
Originality	.34	.558	8.25	.004
Unlikely Things	7.12	.008	.98	.324

[a] Degrees of freedom = 1,822

Table VB-R-C8

ANOVA for Student Cognitive Outcomes for Main Effects of Grade
Year 2

Cognitive Outcomes	F^a	p
Reading		
References	4.81	.029
Math Problem Solving	.17	.683
Fluency	1.31	.253
Flexibility	2.36	.124
Originality	6.76	.010
Unlikely Things	5.88	.016

[a] Degrees of freedom = 1,822

(2) Data on Affective/Social Outcomes

There are two single-class cells. In Grade 5 Medium Income Low Rewards, the class tends to be low on pretest and posttest affective/social outcomes. There is no evidence of bias in selection or in data collection. In Grade 6 Low Income Low Rewards, the class tends to be low or near the middle of its grade on pretest and posttest scores. There is no evidence of bias in data collection.

The means based on individual level analyses are in Table VB-R-A1.

The MANOVA results for both individual and class level analyses are in Table VB-R-A2. In the class level analyses, Income main effects are found, as has been the case in several analyses of organizational variables for this year. SWF Rewards for Teacher Role Behavior is very close to significance. The student outcome significantly (apparently) affected is the SOCL, and students in low Rewards schools have a higher score. At the individual level, the same is true. However, at that level, the main effect is significant for other variables which favor schools high in Rewards. That will be discussed below.

A significant three-way interaction of Grade, Income (Medium by Low Income contrast), and rewards was found. The univariate data are in Table VB-R-A3. The effects are significant for Getting Help. Examination of the means indicates that the effects are opposite for the grade and income combinations for the High or Low Rewards conditions.

A significant Income (Medium by Low) by Rewards interaction was reported in Table VB-R-A2. Univariate results are in Table VB-R-A4. Effects are significant for the SOCL, the POQ, and the IAR. Examination of the means indicates that Medium Income school students in High Rewards schools have higher outcome scores. At the Low Income level, there is probably no difference or students in Low Rewards schools do better.

A significant Rewards main effect is reported. It is significant for the SOCL, the POQ, and the IAR. Univariate data are in Table VB-R-A5. Examination of the means indicates that students in High Rewards schools score higher on the POQ and the IAR; students in Low Rewards schools score higher on the SOCL.

The significant main effect for Income (Medium by Low) is the same as for SWF Teacher Role Behavior, and was discussed in section V.B.6.b.(2) above.

Summarizing for affective/social outcomes, the results are quite mixed. The Income by Rewards interaction and the Rewards main effects give some support to the assertion that students are better off in High Rewards schools. However, the balance is too close to make such an assertion.

Table VB-R-A1

Student Affective/Social Outcome Mean Scores by Grade, Income, and Rewards for SWF Teacher Role Behavior Year 2

Affective/ Social	Income	Means			
		Grade 5		Grade 6	
		Rewards		Rewards	
		High	Low	High	Low
SOCL	High	-.085	.171	.029	.154
	Medium	.025	-.406	.067	.316
	Low	-.359	-.056	-.208	.100
	Unweighted Means	-.114	-.097	-.037	.190
POQ	High	-.033	.005	.131	.218
	Medium	.125	-.324	-.033	-.376
	Low	-.012	-.007	.036	-.028
	Unweighted Means	.027	-.110	.045	-.062
IAR	High	.069	-.260	.269	.165
	Medium	-.004	-.197	.098	-.235
	Low	-.049	-.119	.009	.120
	Unweighted Means	.005	-.192	.125	.017
Giving Help	High	-.107	.306	.151	-.021
	Medium	.042	.115	-.097	.032
	Low	-.086	-.088	-.016	.161
	Unweighted Means	.050	.111	.013	.057
Getting Help	High	-.102	.050	.123	.026
	Medium	.163	-.121	-.050	.106
	Low	-.258	-.156	.029	-.136
	Unweighted Means	-.065	-.076	.034	-.001

Table VB-R-A2

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and Rewards for SWF Teacher Role Behavior

Year 2

Individual Level Analyses

Source	F^a	p
Grade	1.87	.097
Income (High X Medium + Low)	1.52	.180
(Medium X Low)	4.35	.001
Program	5.08	.001
Grade X Program	.45	.812
Income X Program		
(High X Medium + Low)	1.50	.188
(Medium X Low)	2.71	.020
Grade X Income X Program		
(High X Medium + Low)	1.85	.102
(Medium X Low)	2.51	.029

[a] Degrees of freedom = 5,818

Class Level Analyses

Source	F^a	p
Grade	1.46	.243
Income (High X Medium + Low)	3.20	.027
(Medium X Low)	4.92	.004
Program	2.64	.053
Grade X Program	.54	.741
Income X Program		
(High X Medium + Low)	.53	.751
(Medium X Low)	1.33	.292
Grade X Income X Program		
(High X Medium + Low)	1.79	.159
(Medium X Low)	1.32	.295

[a] Degrees of freedom = 5,21

Table VB-R-A3

ANOVA for Student Affective/Social Outcomes for Three-Way Interaction of Grade, Income, and Rewards for SWF Teacher Role Behavior Year 2

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
SOCL	NOT SIGNIFICANT		2.06	.151
POQ			1.33	.249
IAR			.32	.574
Giving Help			.25	.618
Getting Help			8.79	.003

[a] Degrees of freedom = 1,822

Table VB-R-A4

ANOVA for Student Affective/Social Outcomes for Two-Way Interaction of Income and Rewards for SWF Teacher Role Behavior Year 2

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
SOCL	NOT SIGNIFICANT		3.95	.047
POQ			7.34	.007
IAR			5.15	.024
Giving Help			.45	.501
Getting Help			.02	.889

[a] Degrees of freedom = 1,822

Table VB-R-A5

ANOVA for Student Affective/Social Outcomes for Main Effects of Rewards for SWF Teacher Role Behavior
Year 2

Affective/Social Outcomes	F^a	p
SOCL	7.44	.007
POQ	5.42	.020
IAR	8.14	.005
Giving Help	1.97	.160
Getting Help	.02	.894

[a] Degrees of freedom = 1,822

(3) Summary for Rewards for SWF Teacher Role Behavior

The impact of Rewards for SWF Teacher Role Behavior is quite mixed. Over all, the implication is that students are more likely to have higher outcome scores in schools in which teachers are believed to be rewarded more frequently for doing the things which are important for teachers to do for the SWF program.

The cognitive outcomes strongly favor the High Rewards schools for Grade 5 students at all income levels and Low Income school students in Grade 6. Students in Low Rewards High and Medium Income schools in Grade 6 have higher outcomes. On balance, High Rewards school students do better.

The affective/social outcomes present a picture in which the significant interactions tend to suggest opposite implications for different grades and outcomes.

d. Impact of Principal Role Score #1

In the second year of the study, data were again obtained from the staff members of participating schools about the activities of the principal. Scores were computed as before. (See sections V.A.3. and V.A.6.d. for a more complete explanation.)

The data were processed as they had been for the first year, and significant differences were found among schools. However, the split of schools between High and Low (on Principal Role Score #1) produced a distribution which was different from that for Rewards for Teacher SWF Role Behavior by only one class. It was concluded that there would not be significant changes in the results.

Therefore, the impact of Principal Role Score #1 can be expected to be essentially the same as that of Rewards.

e. Impact of Principal Role Score #2

Staff members of the schools responded to questions about the activities of the principal. There were three scores computed on the basis of factors identified through factor analysis. (For further discussion of this measure, see section V.A.3. and section V.A.6.e. above.) The second score was based on the factor labelled Accepting, Easy to Work With. Each respondent was given a score based on responses to the questionnaire items comprising the factor. Averages were computed for each school. An ANOVA was conducted on those scores, and significant differences among schools found. Schools were then arrayed according to their score from high to low, and a split made as near the middle of the set as a reasonable difference between scores permitted. A significant difference between the two sets of schools was determined. Students were then clustered according to Grade, Income, and the position of their school on Principal Role Score #2.

The distribution of students and classes is shown in Table VB-P2-1. The data indicate that staff members in High Income schools appear more likely to describe their principal high on this dimension than are staff members in Medium and Low Income schools. That table also shows that one cell of the three-factor design had no entries, the Grade 6, High Income, Low Principal Role Score #2 cell. For that reason, High Income comparisons with other levels will not be made. There are also two cells with single classes.

(1) Data on Cognitive Outcomes

Consideration will be given first to cells with single classes. One of those is in Grade 5 High Income Low Principal Role Score #2. The class in that cell tended to score relatively high pre and post on many measures. Like some other classes, it showed some decrease on the TTCT from pre to post. Given that the High Principal Role Score #2 cell had higher means on the References and Math Problem Solving outcomes, indication of bias on the TTCT measures is low. There is no evidence of bias in selection nor in data collection for this class.

The other cell with a single class is in Grade 5 Low Income High Principal Role Score #2. This class tended to have pre and posttest scores below the mean for its grade. It appeared to have much the same relative position on pre and posttests. There is no evidence of bias in selection nor in data collection.

The means, based on individual level analyses, are in Table VB-P2-C1.

The MANOVA for both individual and class level analyses are in Table VB-P2-C2. Only the main effects of Grade and Income (Medium by Low Income contrast) are significant in the class level analyses. At the individual level, significance was attained by Principal Role Score #2 and the interaction of Income and Principal Role Score #2.

The remainder of the discussion will be based on individual level analyses.

As shown in Table VB-P2-C2, the three-way interaction is not significant. The interaction of Income (Medium by Low Income contrast) and Principal Role Score #2 is significant. The univariate data are in Table VB-P2-C3. Those data show significant effects for the interaction on the TTCT measures and Unlikely Things. Examining the means in Table VB-P2-C1 indicates a similar pattern on all variables at both grade levels. Students in Medium Income schools have higher outcome scores if they are in schools Low on Principal Role Score #2; but students in Low Income schools have higher outcome scores if they are in schools High on Principal Role Score #2. While noting these results, it is well to note also that in Grade 5, students in High Income schools which were High on Principal Role Score #2 appear to have the higher outcome score on five of the six outcomes. It provides additional evidence of an Income by Principal Role Score #2 interaction. It also gives some weight to the indication in these data that it is probably better to have a high score on this independent variable.

Table VB-P2-C2 also shows a significant main effect of Principal Role Score #2. The univariate data for this finding are in Table VB-P2-C4. References is the only outcome significantly affected. The means table shows that students in High Principal Role Score #2 schools in all income levels in Grade 5 and Low Income in Grade 6 (in five of six comparisons) appear to have higher outcome scores.

The significant main effects for Income and Grade are essentially the same as discussed in previous sections.

To sum up the findings for cognitive outcomes, Medium Income school students do better on the TTCT in Low Principal Score #2. Otherwise, students generally do better in High Principal Score #2 schools.

Table VB-P2-1

Distribution of Students and Classes for Cognitive and Affective/Social Outcomes by Grade, Income, and Principal Role Score #2

Year 2

Individual Level Analyses

Income	Grade 5		Grade 6	
	Prin Role Score #2		Prin Role Score #2	
	High	Low	High	Low
High	92	23	96	0
Medium	80	109	66	142
Low	25	103	52	58

Class Level Analyses

Income	Grade 5		Grade 6	
	Prin Role Score #2		Prin Role Score #2	
	High	Low	High	Low
High	4	1	4	0
Medium	3	4	3	6
Low	1	5	3	3

Table VA-P2-C1

Student Cognitive Outcome Mean Scores by Grade, Income, and Principal Role Score #2
Year 2

Cognitive Outcomes	Income	Means			
		Grade 4		Grade 5	
		Prin Role Score 2		Prin Role Score 2	
		High	Low	High	Low
References (ITBS)	High	.203	.012	.251	0
	Medium	-.019	-.146	.044	.024
	Low	-.014	.186	.018	-.228
	Unweighted Mean	.057	.107	.104	-.102
Math Problem Solving (ITBS)	High	.120	.005	.127	0
	Medium	.027	-.135	-.132	-.023
	Low	.119	.040	-.049	-.064
	Unweighted Mean	.088	-.030	-.018	-.044
Fluency (TTCT)	High	.147	-.511	.001	0
	Medium	-.009	.339	-.176	.065
	Low	.018	-.261	.129	-.277
	Unweighted Mean	.052	-.144	-.015	.106
Flexibility (TTCT)	High	.082	-.474	.202	0
	Medium	-.117	.265	-.106	.124
	Low	-.032	-.322	.010	-.218
	Unweighted Mean	.022	-.177	.035	-.047
Originality (TTCT)	High	.202	-.554	-.042	0
	Medium	.070	.350	-.265	.022
	Low	.176	-.229	.177	-.366
	Unweighted Mean	.149	-.144	-.043	-.172
Unlikely Things	High	.018	.247	.220	0
	Medium	-.144	.028	-.129	.068
	Low	-.036	-.263	.094	.033
	Unweighted Mean	-.054	.004	.062	.050

Table VB-P2-C2

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Year 2

Individual Level Analyses

Source	F^a	p
Grade	6.69	.001
Income ~~(High X Medium + Low)~~ (Medium X Low)	4.61	.001
Program	2.37	.028
Grade X Program	.56	.761
Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	6.21	.001
Grade X Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	1.13	.342

[a] Degrees of freedom = 6,819

Class Level Analyses

Source	F^a	p
Grade	4.74	.003
Income ~~(High X Medium + Low)~~ (Medium X Low)	2.42	.061
Program	.98	.463
Grade X Program	.39	.880
Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	1.58	.201
Grade X Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	.30	.929

[a] Degrees of freedom = 6,21

Table VB-P2-C3

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income and Principal Role Score #2 Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
Reading	EMPTY CELL			
References			1.15	.283
Math Problem Solving			.03	.858
Fluency			29.09	.001
Flexibility			16.38	.001
Originality			31.48	.001
Unlikely Things			5.77	.017

[a] Degrees of freedom = 1,824

Table VB-P2-C4

ANOVA for Student Cognitive Outcomes for Main Effects of Principal Role Score #2 Year 2

Cognitive Outcomes	F^a	p
Reading		
References	6.71	.010
Math Problem Solving	.50	.479
Fluency	.56	.453
Flexibility	.02	.893
Originality	2.50	.114
Unlikely Things	1.16	.281

[a] Degrees of freedom = 1,824

(2) Data on Affective/Social Outcomes

As noted in the section on cognitive outcomes immediately above, there are two cells in which data are from a single class. In Grade 5, High Income, Low Principal Role Score #2, the class tended to score above the grade mean on most affective/social outcomes and have mixed results on the posttest, with most above the mean. Most of the affective/social residuals for this class are between the extremes for its grade and income set. There was no evidence of bias in selection or data collection. The other class constituting a cell was in Grade 5, Low Income, High Principal Role Score #2. This class tended to be low on pretest affective/social outcomes and much the same on the posttest. Most of the residuals for this class on affective/social outcomes are between the extremes for its grade and income set.

The means are based on individual level analyses and are in Table VB-P2-A1.

The MANOVA for both individual and class levels of analyses are in Table VB-P2-A2. At the class level of analyses, two findings were significant. Students in Medium Income schools had higher outcomes on the SOCL and Getting Help than did students in Low Income schools. The main effect of Principal Role Score #2 was on the SOCL. There, as before, students in schools low on Principal Role Score #2 did better.

The remainder of the discussion is based on individual level analyses.

The three-way interactions are not significant. The interaction of Income (Medium by Low Income contrast) and Principal Role Score #2 is significant. The univariate data in Table VB-P2-A3 show that the effects are significant for the SOCL and the POQ. The means indicate that Medium Income school students in schools High in Principal Role Score #2 do better; the students in Low Income, Low Principal Role Score #2 schools do better.

There is also a significant main effect for Principal Role Score #2. The univariate results in Table VB-P2-A4 indicate the effects are significant for the POQ and for Giving Help. Students in High Principal Role Score #2 schools score higher on the POQ. Students in Low Principal Role Score #2 schools score higher on Giving Help.

Examination of the means in Table VB-P2-A1 indicates that, at both grade levels, Low Income school students score higher on four of five outcomes if they are in Low Principal Role Score #2 schools.

Reviewing the data on affective/social outcomes, students in Low Income schools appear to do better in Low Principal Role Score #2 schools. Students in Medium Income schools do better in High Principal Role Score schools on the SOCL and the POQ. Thus, the impact on these student outcomes of the principal being seen as accepting and easy to work with varied from outcome to outcome. It does not permit a general statement of program effect.

Table VB-P2-A1.

Student Affective/Social Outcome Mean Scores by Grade, Income, and Principal Role Score #2 Year 2

Affective/ Social	Income	Means Grade 5 Prin Role Score #2 High	Low	Grade 6 Prin Role Score #2 High	Low
SOCL	High	.013	.233	.094	0
	Medium	.107	-.119	.042	.198
	Low	-.496	-.132	-.257	-.048
	Unweighted Means	-.125	-.006	.040	.075
POQ	High	-.019	-.022	.177	0
	Medium	.298	-.088	-.034	-.198
	Low	-.332	.069	-.015	.057
	Unweighted Means	-.018	-.014	.043	-.070
IAR	High	.014	.313	.215	0
	Medium	-.061	.001	.012	-.022
	Low	-.245	-.046	-.077	.128
	Unweighted Means	-.097	-.120	.050	.035
Giving Help	High	-.002	.227	.062	0
	Medium	.007	.092	-.178	.002
	Low	-.194	-.061	-.021	.056
	Unweighted Means	-.067	-.046	.086	.029
Getting Help	High	-.014	-.177	.072	0
	Medium	.192	.087	-.005	.004
	Low	-.163	-.216	.031	-.035
	Unweighted Means	.005	-.102	.033	-.016

Table VB-P2-A2

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and Principal Role Score #2
Year 2

Individual Level Analyses

Source	F[a]	p
Grade	2.08	.066
Income ~~(High X Medium + Low)~~ (Medium X Low)	4.16	.001
Program	3.95	.002
Grade X Program	.73	.603
Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	3.25	.007
Grade X Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	1.01	.409

[a] Degrees of freedom = 5,820

Class Level Analyses

Source	F[a]	p
Grade	1.54	.217
Income ~~(High X Medium + Low)~~ (Medium X Low)	3.69	.014
Program	2.84	.040
Grade X Program	.57	.720
Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	1.73	.170
Grade X Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	.90	.498

[a] Degrees of freedom = 5,22

Table VB-P2-A3

ANOVA for Student Affective/Social Outcomes for Two-Way Interaction of Income and Principal Role Score #2

Year 2

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
SOCL			5.38	.021
POQ			12.20	.001
IAR	EMPTY CELL		1.44	.230
Giving Help			.28	.597
Getting Help			.13	.721

[a] Degrees of freedom = 1,824

Table VB-P2-A4

ANOVA for Student Affective/Social Outcomes for Main Effects of Principal Role Score #2

Year 2

Affective/Social Outcomes	F^a	p
SOCL	2.55	.111
POQ	4.22	.040
IAR	.04	.846
Giving Help	3.91	.048
Getting Help	2.13	.145

[a] Degrees of freedom = 1,824

(3) Summary for Principal Role Score #2

The impact of being in a school in which the principal is characterized as being accepting and easy to work with on student outcomes is quite mixed. The evidence does not give clear demonstration that students will be better off or worse off over-all.

On cognitive outcomes, students in Grade 5 in High Principal Role Score #2 schools in High and Low Income schools have higher outcomes. Medium Income school students in that grade do better in Low Score #2 schools. In Grade 6, Low Income school students do better in High Score #2 schools while Medium Income school students do better in Low Score #2 schools. On balance, students do better on cognitive outcomes in High Principal Role Score #2 schools.

For affective/social outcomes, Medium Income school students in High Score #2 schools score higher on the SOCL and the POQ (when grades are combined); Low Income school students do better in Low Score #2 schools. Because of the general tendency of Low Income school students to score higher in Low Score #2 schools, and the very mixed pattern for other income levels, there is some tendency for the balance for affective/social outcomes to be higher in Low Principal Role Score #2 schools.

f. Impact of Staff Problem Solving

The distribution of students and classes for the analyses of this organizational dimension are shown in Table VB-PS-1. There is an empty cell in Grade 6 in the High Income low Staff Problem Solving cell. As a consequence, comparisons depending upon that cell will not be made.

(1) Data on Cognitive Outcomes

There are three cells which are composed of a single class. They are all in Grade 5. The class in High Income Low Staff Problem Solving position performed above the mean on most of the pretests and many of the posttests. It did less well on the TTCT posttests. There is no information to suggest any errors or bias in the data.

The second single-class cell is in the Medium Income Low Staff Problem Solving position. This class tended to be below the mean on most measures pre and post, at or near the bottom of all classes in its grade on several. Its residuals present a mixed pattern among the classes in its grade and income set. There is no information to suggest any errors or bias in the data.

The third single-class cell is in the Low Income High Staff Problem Solving position. The class was more often below its grade mean, several times closer to the bottom score than to the mean on pre and post measures. Its residuals tend to be toward the high end of its Income and Grade set. There is no indication of bias or errors in the data.

The means, based on individual level analyses, are in Table VB-PS-C1.

The MANOVA results for both individual and class levels of analysis are in Table VB-PS-C2. More results are significant in the individual level analyses. Since the pattern of means is similar for the two sets of analyses, the differences in the MANOVA results probably stem from differences in number of units and in variance.

The remainder of the discussion will be based on individual level analyses.

The three-way interaction among Grade, Income, and Staff Problem Solving comes close to--but does not reach--significance at the .05 level. Given the configuration of mean scores in Table VB-PS-C1, especially regarding the TTCT outcomes, such an interaction appears likely. There, it looks like Grade 5 students in High Problem Solving schools regularly score higher; while Grade 6 students who are in Low Income schools do better in High Problem Solving schools, and the Medium

Income school students do better in Low Problem Solving schools. However, significance was not attained.

Table VB-PS-C2 shows a significant interaction between Income and Program. The univariate data are provided in Table VB-PS-C3 and indicate significant effects for the contrast of Medium with Low Income school students. Effects are significant for References, Fluency, Flexibility, and Originality. Unlikely Things approaches significance. Examination of the means indicates that Medium Income students provide the interaction. Students in Low Income schools have higher scores in High Problem Solving schools on 11 of the 12 possible program comparisons at the two grade levels. Medium Income school students, on the other hand, have apparently higher scores on five of six comparisons in Grade 5 if in High Problem Solving schools, but have higher scores on five of six comparisons in Grade 6 if in Low Problem Solving schools. Noting that the Income differences seem linked to the Grade differences reinforces the implication of a three-way interaction being the most accurate interpretation of the data.

A significant Grade by Program interaction was also shown in Table VB-PS-C2. As Table VB-PS-C4 shows, the interaction has significant effects on Fluency, Flexibility, Originality, and Unlikely Things. Grade 5 students score higher in High Problem Solving schools, but the picture is mixed for students in Grade 6. (This again reflects the three-way analysis providing a better interpretation, since it is the Grade 6 Medium Income students who do not do as well in High Problem Solving schools.)

Table VB-PS-C2 also indicates a significant main effect of Program. The univariate data are in Table VB-PS-C5. Inspecting the means clearly shows that High Problem Solving students in Grade 5 are nearly uniformly scoring higher than students in that grade in Low Problem Solving schools. The split between Medium and Low Income schools students in Grade 6 keeps the picture less clear. However, it does seem that the over-all picture would support a belief that it is better for students to be in the High Problem Solving schools.

The significant Income main effect is a repetition of the finding for Goals. The same is true for the Grade effects.

To sum up, Grade 5 students do better on cognitive outcomes if they are in High Problem Solving schools. Grade 6 students in Medium Income schools do better in Low Problem Solving schools, while those in Low Income schools do better in High Problem Solving schools.

Table VB-PS-1

Distribution of Students and Classes for Cognitive and Affective/Social Outcomes by Grade, Income and Staff Problem Solving

Year 2

Individual Level Analyses

Income	Grade 5		Grade 6	
	Staff Problem Solving		Staff Problem Solving	
	High	Low	High	Low
High	92	23	96	0
Medium	168	21	140	68
Low	25	103	52	58

Class Level Analyses

Income	Grade 5		Grade 6	
	Staff Problem Solving		Staff Problem Solving	
	High	Low	High	Low
High	4	1	4	0
Medium	6	1	6	3
Low	1	5	3	3

Table VB-PS-C1

Student Cognitive Outcome Mean Scores by Grade, Income, and Staff Problem Solving Year 2

Cognitive Outcomes	Income	Means			
		Grade 5		Grade 6	
		Staff Problem Solv		Staff Prob Solv	
		High	Low	High	Low
References (ITBS)	High	.203	.012	.251	0
	Medium	-.099	-.037	-.001	.094
	Low	-.014	-.186	.018	-.228
	Unweighted Mean	.030	-.070	.089	-.067
Math Problem Solving (ITBS)	High	.120	.005	.127	0
	Medium	-.055	-.161	-.010	-.156
	Low	.119	.040	-.050	-.064
	Unweighted Mean	.061	-.039	.023	-.110
Fluency (TTCT)	High	.147	-.511	.001	0
	Medium	.222	-.046	-.143	.260
	Low	.018	-.261	.129	-.277
	Unweighted Mean	.129	-.273	-.004	-.008
Flexibility (TTCT)	High	.082	-.474	.202	0
	Medium	.129	-.107	-.079	.319
	Low	-.032	-.322	.010	-.218
	Unweighted Mean	.060	-.301	.044	.051
Originality (TTCT)	High	.202	-.554	.042	0
	Medium	.279	-.147	-.221	.244
	Low	.176	-.229	.177	-.366
	Unweighted Mean	.219	-.308	-.029	-.061
Unlikely Things	High	.018	.247	.220	0
	Medium	-.035	-.127	-.117	.256
	Low	-.036	-.263	.094	.033
	Unweighted Mean	-.018	-.048	.066	.144

Table VB-PS-C2

Multivariate ANOVA of Student Cognitive Outcomes by Grade, Income, and Staff Problem Solving

Year 2

Individual Level Analyses

Source	F^a	p
Grade	6.60	.001
Income ~~(High X Medium + Low)~~ (Medium X Low)	3.54	.002
Program	2.40	.026
Grade X Program	4.19	.001
Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	4.68	.001
Grade X Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	1.93	.073

[a] Degrees of freedom = 6,819

Class Level Analyses

Source	F^a	p
Grade	4.71	.004
Income ~~(High X Medium + Low)~~ (Medium X Low)	2.37	.067
Program	.72	.637
Grade X Program	1.04	.429
Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	3.40	.017
Grade X Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	.80	.580

[a] Degrees of freedom = 6,21

Table VB-PS-C3

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Income and Staff Problem Solving
Year 2

Cognitive Outcomes	High X Medium + Low Income		Medium X Low Income	
	F^a	p	F^a	p
Reading				
References			7.62	.006
Math Problem Solving			.75	.387
Fluency	EMPTY CELL		13.56	.001
Flexibility			7.15	.008
Originality			15.92	.001
Unlikely Things			3.48	.063

[a] Degrees of freedom = 1,824

Table VB-PS-C4

ANOVA for Student Cognitive Outcomes for Two-Way Interaction of Grade and Staff Problem Solving
Year 2

Cognitive Outcomes	F^a	p
Reading		
References	.00	.969
Math Problem Solving	.75	.386
Fluency	17.14	.001
Flexibility	10.41	.001
Originality	19.36	.001
Unlikely Things	5.39	.021

[a] Degrees of freedom = 1,824

Table VB-PS-C5

ANOVA for Student Cognitive Outcomes for Main Effects of Staff Problem Solving
Year 2

Cognitive Outcomes	F[a]	p
Reading		
References	.79	.376
Math Problem Solving	2.42	.120
Fluency	6.35	.012
Flexibility	2.08	.150
Originality	10.00	.002
Unlikely Things	.79	.374

[a] Degrees of freedom = 1,824

(2) Data on Affective/Social Outcomes

The distribution of students is the same as for the cognitive outcomes. As with the cognitive data, there is nothing in the affective/social data on the three classes which are alone in the three cells in Grade 5 to suggest a distortion in the data.

The mean scores for the individual level analyses are in Table VB-PS-A1.

The MANOVA results for both individual and class levels are provided in Table VB-PS-A2. The results are essentially the same, although the levels of significance attained by the individual level analyses are higher.

The remainder of the discussion will be based on the individual level analyses.

The interaction of Income by Staff Problem Solving is significant for the Medium by Low Income contrast. The effects are significant for the POQ and the IAR, as shown in Table VB-PS-A3. On those two variables, at both grade levels, students in Medium Income schools had higher scores if they were in High Problem Solving schools than did their income counterparts in Low Problem Solving schools. The opposite was true for Low Income students. Examination of the means in Table VB-PS-A1, however, suggests that that pattern is not consistent across all variables and suggests that the interaction may reflect the apparent tendency of Low Income students in both grades to have higher affective/social outcome scores in Low Problem Solving schools, while Medium Income school students appear to score higher in Grade 5 but have mixed results in Grade 6.

No other interactions are significant.

Table VB-PS-A2 shows a significant main effect for Staff Problem Solving. Significance is reached for the SOCL, the POQ, and the IAR. The High Problem Solving school students appear to have more favorable outcomes on the POQ and the IAR, while the Low Problem Solving school students have higher scores on the SOCL. Examination of the means in Table VB-PS-A1, however, indicates that the means appear to be higher in both High and Low Problem Solving schools often.

The Income and Grade main effects, again significant, were discussed regarding Question 1 and need no further consideration.

To sum up, the results in this analysis present a mixed picture. There is evidence of an interaction of Income by Staff Problem Solving on some variables. The most consistent result is the tendency of Low Income school students to have higher outcome scores in Low Problem Solving schools.

Table VB-PS-A1

Student Affective/Social Outcome Mean Scores by Grade, Income, and Staff Problem Solving
Year 2

Affective/ Social	Income	Means			
		Grade 5		Grade 6	
		Staff Problem Solving		Staff Problem Solving	
		High	Low	High	Low
SOCL	High	.013	.233	.094	0
	Medium	.025	-.406	.067	.316
	Low	-.496	.132	-.257	-.048
	Unweighted Means	-.153	-.102	-.032	.134
POQ	High	-.019	-.022	.177	0
	Medium	.125	-.324	-.033	-.376
	Low	-.332	.069	-.015	.057
	Unweighted Means	-.075	-.078	.043	-.160
IAR	High	.014	-.313	.215	0
	Medium	-.004	-.197	.098	-.235
	Low	-.245	-.046	-.077	.128
	Unweighted Means	-.079	-.185	.079	-.054
Giving Help	High	-.002	.227	.062	0
	Medium	.042	.115	-.097	.032
	Low	-.194	-.061	-.021	.056
	Unweighted Means	-.051	.094	-.019	.044
Getting Help	High	-.014	-.177	.072	0
	Medium	.163	-.121	-.050	.106
	Low	-.163	-.216	.031	-.035
	Unweighted Means	-.005	-.171	.018	.035

Table VB-PS-A2

Multivariate ANOVA of Student Affective/Social Outcomes by Grade, Income, and Staff Problem Solving

Year 2

Individual Level Analyses

Source	F^a	p
Grade	1.96	.082
Income ~~(High X Medium + Low)~~ (Medium X Low)	5.48	.001
Program	4.61	.001
Grade X Program	1.45	.204
Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	4.57	.001
Grade X Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	1.85	.100

[a] Degrees of freedom = 5,820

Class Level Analyses

Source	F^a	p
Grade	1.73	.169
Income ~~(High X Medium + Low)~~ (Medium X Low)	5.57	.002
Program	3.00	.033
Grade X Program	1.49	.234
Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	2.78	.043
Grade X Income X Program ~~(High X Medium + Low)~~ (Medium X Low)	1.22	.333

[a] Degrees of freedom = 5,22

Table VB-PS-A3

ANOVA for Student Affective/Social Outcomes for Two-Way Interaction of Income and Staff Problem Solving
Year 2

Affective/Social Outcomes	High X Medium + Low Income		Medium X Low Income	
	F[a]	p	F[a]	p
SOCL			3.20	.074
POQ			15.47	.001
IAR	EMPTY CELL		9.77	.002
Giving Help			.00	.997
Getting Help			.09	.759

[a] Degrees of freedom = 1,824

Table VB-PS-A4

ANOVA for Student Affective/Social Outcomes for Main Effects of Staff Problem Solving
Year 2

Affective/Social Outcomes	F[a]	p
SOCL	6.45	.011
POQ	4.98	.026
IAR	3.78	.052
Giving Help	2.03	.155
Getting Help	1.13	.287

[a] Degrees of freedom = 1,824

(3) Summary for Staff Problem Solving

In general, the impact on student outcomes of being in schools in which faculty describe their problem solving processes more favorably is positive: students tend to score higher. However, the picture is varied.

On cognitive outcomes, students in Grade 5 do better in High Staff Problem Solving schools. In Grade 6, Low Income school students do better in High Staff Problem Solving schools, while Medium Income school students do better in Low Staff Problem Solving schools.

For affective/social outcomes, the most consistent tendency is for Low Income School students to score higher if they are in Low Staff Problem Solving schools. Results for other income levels are mixed.

g. Summary for Year 2

To provide a summary statement, these steps were taken:

(1) The MANOVA and ANOVA results were reviewed.

(2) The results of the main effects of the program variables were studied.

(3) The means tables were studied to determine whether the "high" or "low" program appeared to be higher by grade and income set.

The following statements summarize Year 2 results for Question 3. Student cognitive outcomes were generally higher in schools in which staff members considered SWF Goals important; in schools in which teachers engaged in SWF Teacher Role Behavior; in schools in which teachers were rewarded for SWF Teacher Role Behavior; in schools in which principals were described as accepting and easy to work with; and in schools in which the staff was effective in problem solving. Student affective/social outcomes were generally higher in schools in which SWF Goals were important.

C. Summary for Question 3

Of the eleven tests of impact of organizational variables on student cognitive outcomes, five found that schools in which the SWF program was reflected had higher student scores. Four of those were found in Year 2.

Only two of the tests of impact on affective/social outcomes were significant. They showed that SWF Goals had positive effects both years.

The absence of general negative effects in any of the major analyses in this set is again noteworthy. The SWF program has some general beneficial effects, no general negative ones.

The program is generally helpful.

VI. CONCLUSIONS AND RECOMMENDATIONS

It is our conclusion that the SWF program had favorable consequences. Despite the limitations of the data and the difficulties of analysis and interpretation, the patterns of the results demonstrate that the program had beneficial effects.

We consider this study to have provided a rather demanding test of the program for several reasons which will be discussed in the following paragraphs:

(1) Limited implementation effort;
(2) Competing demands of desegregation;
(3) Competing demands of other school district programs;
(4) Instructional-organizational impediments;
(5) "Incompatibilities" with American culture.

A. Limited Implementation Effort

The school district invested limited energy and money in support of the program. The district--like most large, central-city districts--had very limited resources for very many responsibilities. The district assigned one staff member to be the program coordinator. This person met with principals and teachers, aiding in any way that might help. The coordinator role was to be supportive and responsive, rather than supervisory or executive. However, there was very little energy from higher administration invested in the program. Other demands kept them occupied. (One administrator received some community antagonism when the program was initiated. The program was seen as dangerous and insidious by some who assumed that, since it was created by a psychiatrist, students would be brainwashed or psychoanalyzed.)

The exception to that statement was the activity of one board member. This person's strong support brought the program into existence over the objections of other board members. This board member participated in some training sessions and visited some of the schools regarding the program. However, time and other constraints kept the impact of those activities from being strong.

The major responsibility for implementation of the program rested on the principal and the lead teacher from participating schools. Those teams had three two-day training sessions with the staff of the Educator Training Center for a given course. Most schools had one course per year; some were involved in two the first year. After the first year, the intensity of training decreased so that a course went for a year rather than a semester.

The research on the program began between the second and third year of implementation. By that time, intensity had decreased. With other changes to be discussed below, extensive implementation of some aspects of the program diminished. In some schools in which two or more training courses had been completed, the seminars in the schools tapered off or ended. It was as though it was then all up to individual teachers, at least in some of the schools.

It may be well to review some of the elements of the SWF program which are central to its impact. Glasser writes that teachers need help from each other and from the principal. He writes that a cohesive, problem-solving faculty group is needed. He states that class meetings are essential. Discussions which include parents and students with teachers are important. A school staff needs to have defined its philosophy and goals. And then the steps of relating to and working with students should be implemented.

Our experience in the schools provided us with opportunity to look for many of these activities and conditions. We found some, but they were limited. As indicated in the section of our study dealing with classroom observation, there were few or no indications of some important SWF characteristics appearing in the classrooms. For example, in the many hours of observing classes--and teachers knew when we were to be there--very few class meetings occurred.

As one teacher said when we reported the results of the study, "We need to be re-charged from time to time to get us back on the track."

That kind of support, encouragement, and resource investment did not occur.

B. Competing Demands of Desegregation

Turning now to the second consideration, during the time that school district resources, limited as they were, were invested in the program, there was much controversy and some change arising from requirements for greater desegregation. At the end of the first year of SWF program implementation, many of the teachers were shifted from one school to another to get a racial distribution which was more nearly proportionate. The consequence of this for the SWF program was that a nearly-new start was needed in many schools.

The agreements which faculty members had built were gone with the departure of some to other schools. The understanding of the program, shared among faculty members was diminished. Projects started could not be finished with some participants gone.

Other aspects of the desegregation efforts also had an impact on program implementation. A limited number of students were being bussed from one part of the community to another. Staff energy and time was required to supervise the transportation and to deal with any problems. Sometimes the diversity of the student population was increased by this transfer of students, thus increasing the demands on teacher effort.

C. Competing Demands of Other Programs

A third consideration of factors which limited the implementation of the program was the competing demands of other school district programs. In addition to the complexities of scheduling and programming which had evolved around compensatory programs supported by Title I and Model Cities, some schools were working with various approaches to differentiated staffing. Some were involved with Individually Guided Education. Some had experimental Follow Through programs. Staff energy and time were required for these, just as for the SWF program. One wonders whether the requirements of these programs were not recognized or not fully faced when one notes the variety of programs which were in progress--more or less--at any one time.

D. Instructional-Organizational Impediments

Very much related to that consideration is the potentially conflicting character of some of the programs. Glasser says that the involvement of teachers and students with each other is the first step in developing the learning setting he advocates. To be involved with others requires time and interaction. We would expect that there would need to be many opportunities for working out agreements about who would do what and who would get what if the interaction is to produce active learning in a supportive and encouraging setting.

However, requirements of the compensatory activities supported by Title I and the necessities of other arrangements, such as team teaching, may interfere with the development of involvement. Under the requirements of Title I, students are removed from their classes regularly for special work with special reading, language, and/or mathematics teachers. Since different students have different needs, the classroom group is constantly shifting as different students come and go for special instruction.

With team teaching, teachers often split their classes along the lines of need (or level of achievement) for particular instructional purposes. Thus, one teacher may take those who do well in math, while another takes those who do poorly. Again, the class is split.

It should be noted that not all teachers in a school were participants in the SWF program. Thus, a student might be with her/his "homeroom" teacher for fairly limited parts of the day and would be, perhaps, with a teacher implementing the SWF program for only those times.

Having students coming and going and having the full class for only limited parts of the day makes class meetings more difficult and also makes them less meaningful. If such meetings sometimes have as their purpose diagnosing instructional problems, they lose their usefulness when students have different teachers at different times for any given instructional purpose. If such meetings are to work out problems in living and learning together, they do not have the same impact when such problems arise in circumstances involving other teachers and other groups of students.

E. "Incompatibilities" with American Culture

A final consideration, and a very speculative one, is that the SWF program, like many programs suggested for schools in recent years, may be proposing a fundamental change in the nature of the relationships between children and adults, students and teachers, and among members of the school staff. Such fundamental changes are likely to create confusion, anxiety, and opposition.

Glasser writes that teachers and students should relate to each other, in part, as friends. An implication of this is that they are more nearly equals. The interests, concerns, and desires of the students could be thought to have more nearly the importance of those of the teacher or the parents. We would argue, however, that treating children in much the same manner as one treats adult friends--while accepting differences in information, experience, and responsibility--is not typical in the United States.

Further, it is our experience that few schools have developed among their faculties the practice of genuine sharing of concerns, resources, and problem solving. Glasser writes that part of the SWF approach involves the school faculty developing a statement of their educational philosophy, working together to identify problems to work on together, and helping each other in solving those problems. An indication that the expectations of some teachers are quite different from SWF philosophy came in the comment of one teacher who was not in the program: "I don't know anything about what other teachers do. I come in, go into my classroom with my students, and do my job. The other teachers do the same. I have no idea what they are doing or how they are doing it."

We think it likely that many elements of our culture work against major changes in the relationships among adults and among adults and children. Prestige and many tangible rewards are linked to existing structures of relationships. Adults can exercise power and obtain such rewards as respect, flexibility, and achievement of their own goals in present relationships with children. Similar considerations are relevant for differences among students, teachers, and administrators.

Therefore, one of the factors affecting program implementation may have been that full implementation would have made those potentially fundamental changes apparent and might have produced unpleasant conditions for those of us who are not attracted to such changes in relationships. Whether through modification of the program, omitting certain elements, or keeping implementation efforts to a minimum, the more fundamental changes implicit in the program did not occur.

F. Recommendations

Our recommendations are of two kinds. First, we will make suggestions about using the SWF program. Second, we will comment on research on school programs.

Our data have shown that, in a demanding test in a central city school district, the SWF program was beneficial for students. We found those results despite evidence that the program was not fully implemented anywhere in our sample. We would recommend that any school district contemplating use of the program review it thoroughly and consider carefully its potential benefits and its costs. It may be that the major costs will be found to be social and psychological--changes in relationships and roles--rather than financial. We would suggest that the program be considered in its completeness--affecting the school faculty and principal as well as classroom teachers, parents as well as students and school staff. The decision to implement--if made seriously--should clarify the intended extent of implementation in relation to expected student outcomes.

We have learned a great deal about the execution of relatively large scale, relatively well-designed research in on-going schools. The difficulties relating to conceptualization, design, sample, data collection, data processing, data analysis, and reporting this study have been ours for five years and more. It is not as clean and rigorous as we would have liked. It is much better than it might have been. It now speaks to the research community and the educational practice community with some of the important complexities of real life taken into consideration and some of the knowledge-generating requirements attended to.

We believe it has much utility and credibility for people interested in having decent data from which to make choices about the factors to include in the design of educational programs. It supports the approach to educational research which is longitudinal, thoughtfully designed, of relatively large scale, and conducted in the field. Education can grow from such research.

This project makes a final point. The SWF program was brought to this school system by its members. It was implemented by them and outside experts other than the researchers. The research team was based in another institution and funded by NIMH, a federal agency. Without the combination of interests and resources, the research evidence could not have been obtained on that program. We recommend that federal support for research in such settings be expanded. It will generate knowledge, help educational choice, and model a significant way for federal and state levels of government to support efforts at self-development at the local level.

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APPENDIX A

BASIC STUDENT OUTCOME SCORES, PRE AND POST, FOR YEAR 2

Table A-C1

Basic Student Outcome Scores for Year 2:* Pre and Post Scores on ITBS References by Grade, Program, and Income

Income	Grade 5		Grade 6	
	SWF	Comparison	SWF	Comparison
Pre				
High	4.58	4.37	5.19	5.14
Medium	3.99	3.44	4.62	3.82
Low	3.37	3.47	4.45	4.63
Post				
High	5.43	5.12	5.67	6.28
Medium	4.39	4.19	5.27	4.38
Low	3.68	4.12	4.54	5.13

*Analyses in the main body of the report were based on residual scores. These tables are provided to inform readers of actual pre and posttest data.

Table A-C2

Basic Student Outcome Scores for Year 2:* Pre and Post Scores on Math Problem Solving by Grade, Program, and Income

Income	Grade 5		Grade 6	
	SWF	Comparison	SWF	Comparison
Pre				
High	4.58	4.76	5.12	5.63
Medium	3.98	3.47	4.60	4.40
Low	2.78	3.36	4.23	4.56
Post				
High	5.33	5.11	5.38	6.23
Medium	4.42	4.13	5.27	4.25
Low	3.88	4.21	4.39	4.99

*Analyses in the main body of the report were based on residual scores. These tables are provided to inform readers of actual pre and posttest data.

Table A-C3

Basic Student Outcome Scores for Year 2:*
Pre and Post Scores on Fluency
by Grade, Program, and Income

Income	Grade 5		Grade 6	
	SWF	Comparison	SWF	Comparison
Pre				
High	23.53	24.52	24.30	32.52
Medium	25.63	18.80	27.61	26.10
Low	15.97	18.00	25.19	30.53
Post				
High	32.49	20.29	23.95	35.50
Medium	33.24	24.36	31.06	27.73
Low	22.81	23.76	23.08	34.39

*Analyses in the main body of the report were based on residual scores. These tables are provided to inform readers of actual pre and posttest data.

Table A-C4

Basic Student Outcome Scores for Year 2:*
Pre and Post Scores on Flexibility
by Grade, Program, and Income

Income	Grade 5		Grade 6	
	SWF	Comparison	SWF	Comparison
		Pre		
High	10.52	10.98	11.15	13.64
Medium	10.93	8.27	11.27	10.24
Low	7.97	8.00	9.69	11.71
		Post		
High	13.77	10.24	11.90	16.22
Medium	13.56	11.09	13.31	12.08
Low	10.68	10.68	10.83	12.50

*Analyses in the main body of the report were based on residual scores. These tables are provided to inform readers of actual pre and posttest data.

Table A-C5

Basic Student Outcome Scores for Year 2:* Pre and Post Scores on Originality by Grade, Program, and Income

Income	Grade 5 SWF	Grade 5 Comparison	Grade 6 SWF	Grade 6 Comparison
Pre				
High	25.18	26.21	28.50	34.62
Medium	30.47	20.96	33.47	31.59
Low	17.08	17.12	32.61	34.66
Post				
High	38.97	19.33	21.35	39.20
Medium	40.93	27.69	34.34	31.92
Low	28.68	29.48	25.19	40.34

*Analyses in the main body of the report were based on residual scores. These tables are provided to inform readers of actual pre and posttest data.

Table A-C6

Basic Student Outcome Scores for Year 2:*
Pre and Post Scores on Unlikely Things by Grade, Program, and Income

Income	Grade 5		Grade 6	
	SWF	Comparison	SWF	Comparison
		Pre		
High	31.45	31.12	29.10	32.72
Medium	30.07	26.76	31.18	29.44
Low	24.97	30.80	29.94	30.53
		Post		
High	33.55	33.31	33.60	34.88
Medium	32.19	30.13	33.46	31.24
Low	27.22	32.56	32.64	33.16

*Analyses in the main body of the report were based on residual scores. These tables are provided to inform readers of actual pre and posttest data.

Table A-A1

Basic Student Outcome Scores for Year 2:*
Pre and Post Scores on SOCL
by Grade, Program, and Income

Income	Grade 5		Grade 6	
	SWF	Comparison	SWF	Comparison
		Pre		
High	61.01	60.95	56.25	60.58
Medium	61.94	58.93	61.10	61.14
Low	61.24	59.76	61.67	62.16
		Post		
High	61.23	62.26	58.30	61.92
Medium	61.93	59.20	62.28	62.15
Low	59.84	57.48	60.89	61.45

*Analyses in the main body of the report were based on residual scores. These tables are provided to inform readers of actual pre and posttest data.

Table A-A2

Basic Student Outcome Scores for Year 2:*
Pre and Post Scores on POQ
by Grade, Program, and Income

Income	Grade 5 SWF	Grade 5 Comparison	Grade 6 SWF	Grade 6 Comparison
Pre				
High	29.75	33.26	24.80	31.14
Medium	30.06	26.56	28.16	26.14
Low	28.68	25.48	26.67	32.68
Post				
High	28.51	30.95	25.95	31.24
Medium	30.09	25.47	26.50	25.79
Low	29.62	23.64	27.67	30.74

*Analyses in the main body of the report were based on residual scores. These tables are provided to inform readers of actual pre and posttest data.

Table A-A3

Basic Student Outcome Scores for Year 2:*
Pre and Post Scores on IAR
by Grade, Program, and Income

Income	Grade 5		Grade 6	
	SWF	Comparison	SWF	Comparison
		Pre		
High	17.86	17.79	16.50	18.74
Medium	18.26	17.87	18.50	17.75
Low	15.97	16.36	17.56	18.26
		Post		
High	18.71	17.45	18.55	19.58
Medium	18.70	18.02	19.14	17.66
Low	17.68	16.68	18.78	18.11

*Analyses in the main body of the report were based on residual scores. These tables are provided to inform readers of actual pre and posttest data.

Table A-A4

Basic Student Outcome Scores for Year 2:*
Pre and Post Scores on Giving Help
by Grade, Program, and Income

Income	Grade 5		Grade 6	
	SWF	Comparison	SWF	Comparison
Pre				
High	1.97	1.98	1.92	1.91
Medium	2.00	1.96	1.89	2.07
Low	2.01	1.87	2.13	1.99
Post				
High	1.88	2.11	1.98	1.88
Medium	1.99	1.91	1.85	1.96
Low	1.95	1.76	2.05	1.88

*Analyses in the main body of the report were based on residual scores. These tables are provided to inform readers of actual pre and posttest data.

Table A-A5

Basic Student Outcome Scores for Year 2:* Pre and Post Scores on Getting Help by Grade, Program, and Income

Income	Grade 5		Grade 6	
	SWF	Comparison	SWF	Comparison
Pre				
High	2.10	2.01	1.98	1.90
Medium	2.11	1.91	1.99	2.11
Low	2.19	1.93	2.33	2.12
Post				
High	2.04	2.07	1.96	2.00
Medium	2.16	2.03	2.00	2.15
Low	2.00	1.93	2.22	2.11

*Analyses in the main body of the report were based on residual scores. These tables are provided to inform readers of actual pre and posttest data.